

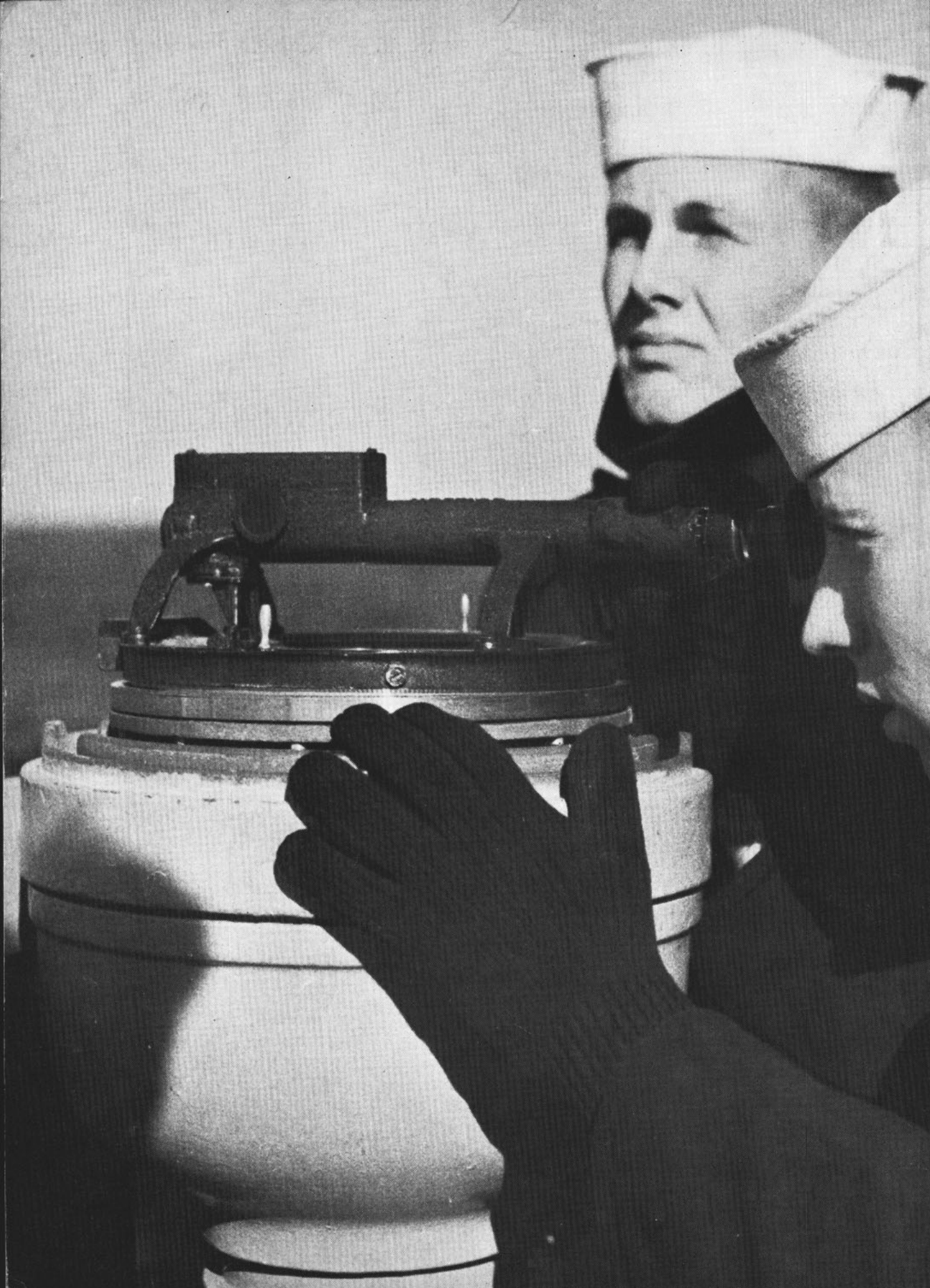
ALL HANDS

THE BUREAU OF NAVAL PERSONNEL INFORMATION BULLETIN



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MARCH 1958



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MARCH 1958

Nav-Pers-O

NUMBER 494

VICE ADMIRAL H. P. SMITH, USN

The Chief of Naval Personnel

REAR ADMIRAL J. R. LEE, USN

The Deputy Chief of Naval Personnel

CAPTAIN O. D. FINNIGAN, Jr., USN

Assistant Chief for Morale Services

TABLE OF CONTENTS

<i>Special Report: Naval Ordnance</i>	Page
Meet the Navy's Missile Family.....	2
Navy Arsenal Packs Punch and Versatility.....	6
Greater Production Okayed for Regulus II.....	8
Tow Targets for Navy's Supersonic Jets.....	9
Thumbnail History of Naval Firepower.....	10
<i>Servicescope</i>	
Guided Missiles in Army and Air Force.....	14
Letters to the Editor.....	16
The Mystery of the Disappearance of USS Conestoga and Other Navy Ships.....	20
Anchoring at Acapulco.....	23
Today's Navy.....	24
Atlantic Fleet Roundup.....	28
How the Gunners in Yesterday's Navy Eliminated the Margin of Error.....	30
Centerspread: Development of Naval Gunnery. From Greek Fire to Guided Missiles.....	32
The Word.....	36
Bulletin Board.....	38
Changeover to Streamlined Rating Structure Gets Underway.....	38
Report on Seavey Segment II.....	41
Just \$700,000 to Go for Memorial Stadium....	41
Roundup of Federal Income Tax Information....	42
You'll Be Interested in This Tax News from Back Home.....	45
Directives in Brief.....	53
Everyone's Talking about Rota, Latest in Over- seas Billets.....	55
<i>Special Supplement</i>	
Rota: New Link in Defense Chain.....	59
Taffrail Talk.....	64

CDR F. C. Huntley, USNR, Editor

John A. Oudine, Managing Editor

Associate Editors

G. Vern Blasdell, News

David Rosenberg, Art

Elsa Arthur, Research

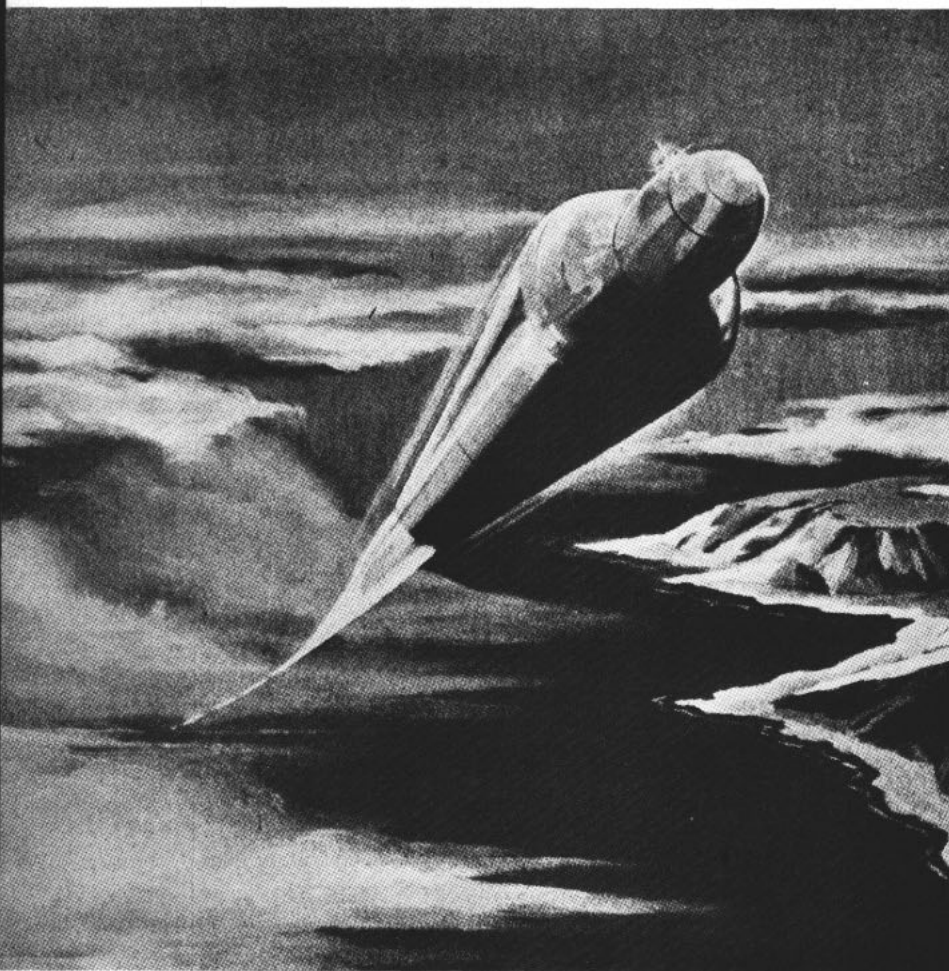
French Crawford Smith, Reserve

Don Addor, Layout

• FRONT COVER: SALTY SKIPPER—CDR C. L. Foushee, USN, Commanding Officer of USS Luzon (ARG 21) congratulates crew members during personnel inspection. CDR Foushee has 42 Navy years that began as seaman third/class in 1915. (See story, p. 27).

• AT LEFT: BEARING WITH IT—Officer candidates G. B. Delaney and (background) H. S. Burns take a bearing during cruise on board Atlantic Fleet greyhound USS Hugh Purvis (DD 709) while making way through waters off Newport, R. I.

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SHIPBOARD IRBM — Artist's conception shows *Polaris* taking off from a submarine for far away target. Missile's solid propellant will take it 1500 miles.

NO DOUBT YOU'VE heard considerable scuttlebutt within recent months about Navy guided missiles and at this point you're more or less confused. Don't worry about it. So many types at various levels of development have been announced that a state of bewilderment is only to be expected.

To help clarify the situation, here's a brief (and unclassified) rundown on what types of missiles the Navy has in the operational, development and planning stages. Bear in mind, however, that progress in this field is so rapid that many an announcement is out of date before it gets into print.

At the moment, five guided missiles—*Sidewinder*, *Petrel*, *Regulus*, *Terrier* and *Sparrow*—are operational.

• *Sidewinder* is the Navy's newest air-to-air guided missile. Named after the desert rattlesnake of the same name, it is guided by an infrared or heat-seeking device, and finds the targets by homing on the

heat emitted from the aircraft.

Sidewinder is an inexpensive, reliable weapon measuring nine feet in length and weighing about 155 pounds. It is designed for destroying high-performance enemy fighters and bombers from sea level to altitudes of over 50,000 feet. The missile, which has very few moving parts and no more electronic components than an ordinary radio, requires no specialized technical training to handle and assemble.

This is the job which is now the primary guided missile weapon used by squadrons in the Sixth Fleet and the Seventh Fleet. It is basically a defensive weapon to increase protection of our men and ships at sea from attacks by enemy aircraft. It permits defending fighters to knock down the fastest enemy aircraft even when it is miles away.

It will also be used in the air defense of the continental United States by the Air Force and Navy.

• *Petrel* is an air-to-surface

weapon 24 feet long, with a wing span of 13 feet and weighs 3800 pounds. It is powered by a turbojet engine and uses radar homing for guidance.

Although it has been operational within the Fleet, it is out of production and turned over to the reserve Fleet.

• *Regulus* is the first operational attack missile to join the Fleet.

Regulus I is a surface-to-surface missile resembling a conventional sweptwing jet fighter about 30 feet long. Its range is in the 500-mile class, and it travels more than 700 miles per hour. Capable of carrying a nuclear warhead, it is powered by a turbojet engine, and is guided by an electronic "brain." Its efficiency was demonstrated last year when

Meet the

uss *Helena* (CA 75) fired a missile at a small island 270 miles away and scored a direct hit.

Regulus launching equipment can be installed in a relatively short period of time on several types of vessels at relatively low cost, with only slight modification to the ship itself.

Ships which can fire this missile include the cruisers uss *Macon* (CA 132), *Helena* (CA 75), *Toledo* (CA 133) and *Los Angeles* (CA 135); the submarines *Tunny* (SSG 282) and *Barbero* (SSG 317) and the aircraft carriers *Randolph* (CVA 15), *Hancock* (CVA 19), *Forrestal* (CVA 59), *Saratoga* (CVA 602), *Lake Champlain* (CVS 39), *Franklin D. Roosevelt* (CVA 42), *Lexington* (CVA 16), *Bennington* (CVA 20), *Bon Homme Richard* (CVA 31) and *Shangri La* (CVA 38).

The uncompleted conventionally-powered submarines uss *Grayback* (SS 574) and *Growler* (SS 577) and the uncompleted nuclear-powered *Halibut*, SSG(N) 587, will also fire *Regulus* missiles.

The missile also can be fired from Navy shore installations. Space and weight compensation are to be reserved in the cruisers in the 1958 ship conversion program for inclusion of *Regulus II* in case there is future need for the missile (see page 8).

Tactically, the missile's main use is against land-based targets but it also can be used against ships.

Regulus II is almost an entirely different missile. It is 57 feet long, and its wingspan is 20 feet. It is capable of traveling better than Mach 2, has an altitude of more than 60,000 feet and a range of more than 1000 miles.

It is capable of carrying a nuclear warhead and is designed for launching from submarines or surface ships. It is guided by either the command system or the inertial navigation system with an assist.

Under the command system, used in test and training flights, the missile can be directed by either ground control or aerial control from a piloted aircraft. Under its inertial navigation system, the missile can guide itself to target without outside control, by use of a system of ac-



BULL'S EYE BOUND — F11F-1 Tiger goes aloft armed with deadly Sidewinder missiles. Using infrared or heat seeking device missile finds own way to target.

Navy's Missile Family

celerometers and gyro scopes. In addition, it can check its own position from specific landmarks close to its target and correct its course accordingly.

Regulus II is an aerodynamic missile, not a ballistic missile. It is con-

tinuously powered and guided all the way from its launching site to target. Ballistic missiles are powered only a portion of their flight. They are "aimed," then follow a trajectory, like a shell, in free flight.

• **Terrier** is an all-weather surface-

to-air missile. Designed to intercept enemy aircraft at longer range and higher altitudes than conventional anti-aircraft guns, the 15-foot weapon weighs about one and one-half tons and has a range of about 10 miles.

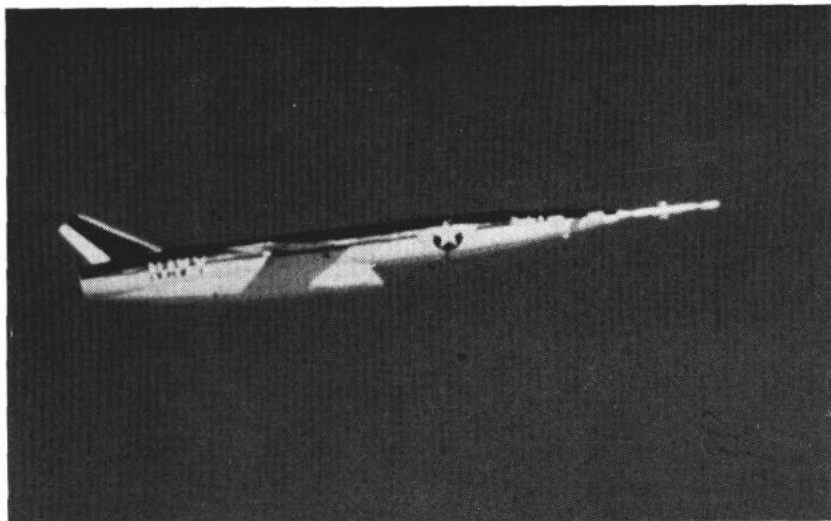
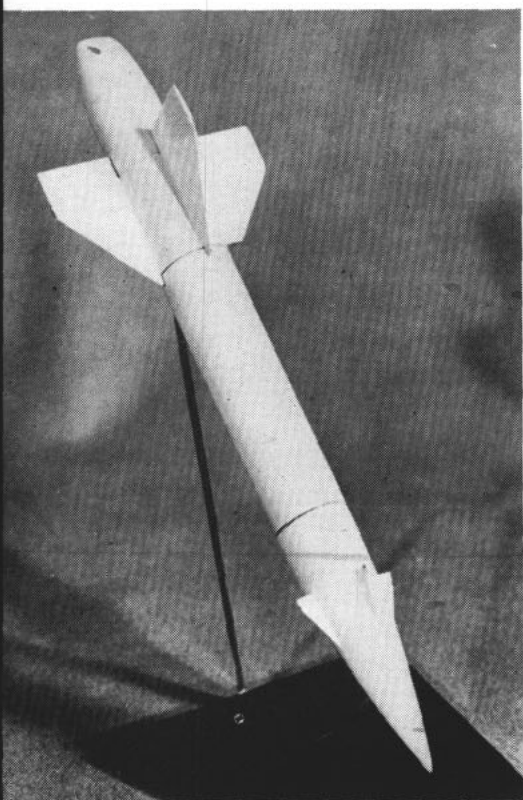
It is now in use on the guided missile cruisers *USS Boston* (CAG 1) and *Canberra* (CAG 2) and the guided missile destroyer *Gyatt* (DDG 1). In addition, the following ships under conversion or construction will use **Terrier**: the aircraft carriers *Kitty Hawk* (CVA 63) and *Constellation* (CVA 64); the cruisers *Topeka* (CLG 8) *Providence* (CLG 6), *Springfield* (CLG 7); the nuclear cruiser *Long Beach* CG(N) 9; and the frigates *Farragut* (DLG 6), *Luce* (DLG 7), *MacDonough* (DLG 8), *Coontz* (DLG 9), *King* (DLG 10), *Mahan* (DLG 11) and *Dewey* (DLG 7).

Shipboard **Terriers** are selected automatically from the magazine and loaded on the launcher, which is then automatically trained, elevated and fired. The entire operation takes only seconds. Radar then guides **Terrier** to the target.

• **Sparrow** is an air-to-air missile which became operational in the Fleet in the spring of 1956. *Sparrow I* is 12 feet long, weighs 300 pounds, and has a speed of over 1500 miles per hour. It is powered by a solid-propellant rocket motor. After being fired (either singly or in rapid sequence salvos), it is

PLANE KILLER — *USS Gyatt* (DDG 1) blasts away with **Terrier** at airborne target. Future guided missile destroyers will be armed with smaller **Tartar** missile.





BIG BROTHER of *Regulus I*: Needle-nosed Number Two is almost an entirely different missile. *Regulus II* with speed over Mach 2 is guided to the target.

BULLPUP is an air-to-surface missile used against such ground targets as pill boxes, tanks, and bridges.

guided to a target by a beam transmitted by the launching aircraft's radar. It does not have nuclear capability. It is useful against high- and low-altitude jet bombers and fighters.

Sparrow I is now being phased out of production, *Sparrow II* was an

experimental missile and not intended for Fleet use, and *Sparrow III* is the one with which you will become most familiar. The new model is still 12 feet long, weighs 50 pounds more than its predecessor, and is rated at the same speed. Navy fighters can carry two to four *Sparrow IIIs*.

• **Talos** is a supersonic surface-to-air missile which becomes operational in the Fleet when conversion of *Galveston* is completed this spring. In addition, *uss Little Rock* (CLG 4) and *Oklahoma City* (CLG 5) are being converted for *Talos* use and the Army's Continental Air Defense has accepted the missile for its use.

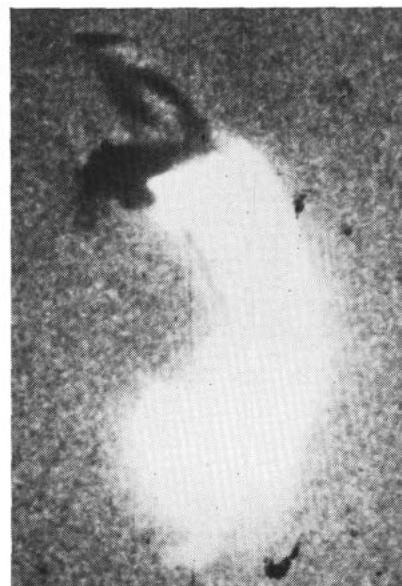
Talos is powered by a ramjet

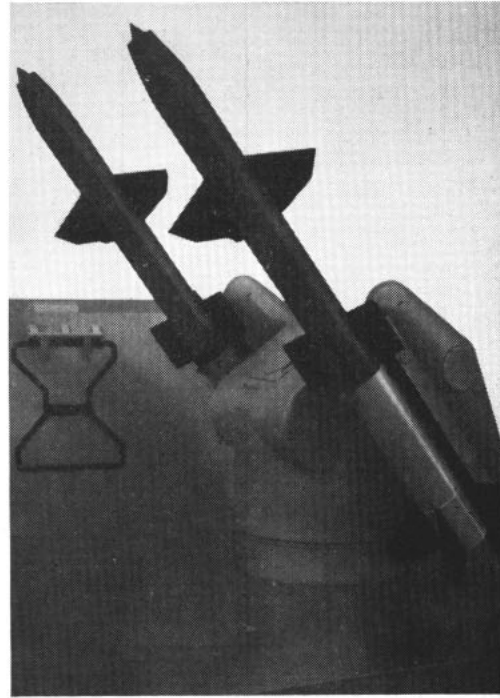
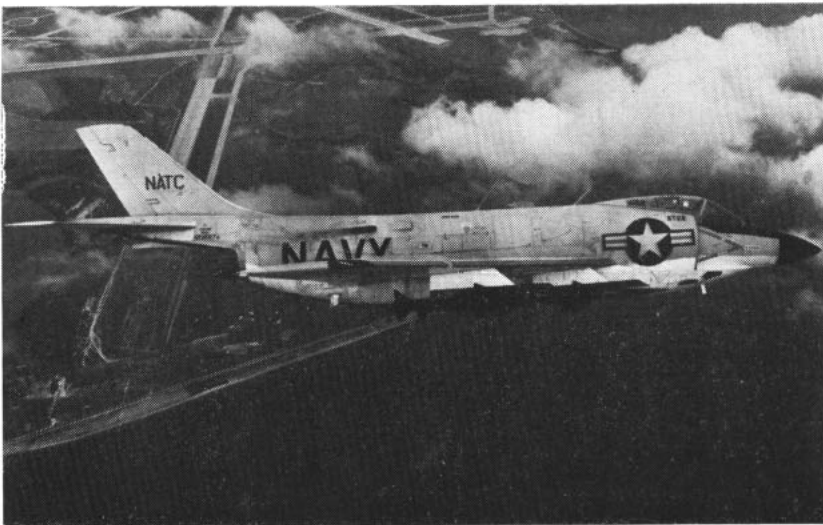
40,000 horsepower engine, weighs about 3000 pounds and is about 20 feet long and 30 inches in diameter. It can destroy enemy aircraft at extremely high altitudes and has a range of over 25 miles. The missile is guided to the target by a mechanical brain within the weapon and when it is within lethal range, a proximity fuse detonates the warhead.

It can carry either high-explosive or nuclear warheads, can destroy supersonic and subsonic targets and is effective against enemy planes using air-to-surface missiles. It can also be used against ships and shore bombardment targets.

• **Tartar**, a junior version of the

THIRD BIRD — *Sparrow III* is checked out in wing launchers of Navy jet fighter. Right: *Sparrow I* blasts target.





FIRST OUT — Sparrow I will be replaced by Number III. Right: Talos, surface-to-air guided missile will be found on board USS Galveston (CLG 3) shortly.

Terrier, is a surface-to-air missile designed especially for use aboard destroyers. It is small enough to go into destroyers and the secondary batteries of large ships, yet has more performance than the original *Terrier*. A solid-propellant rocket, it will be installed in the guided missile destroyers (DDG 2 through 9) which are now under construction.

• **Polaris** is the Navy's shipboard Intermediate Range Ballistic Missile, now well along in its development. Smaller and lighter than the United States' other IRBMs, it is designed especially for shipboard use. Using a solid-propellant fuel, its range is about 1500 miles.

Polaris' tactical mission will be to beat down fixed-base air and missile

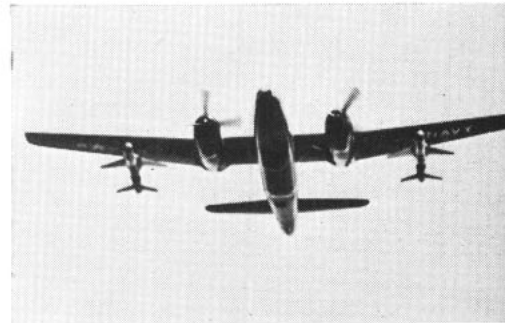
defenses and pave the way for carrier strikes aimed at destroying mobile or concealed primary targets.

• **Triton** was a surface-to-surface missile which was cancelled late last year. However, many of *Triton's* more desirable features may be incorporated into future missiles.

• **Bullpup** is an air-to-surface tactical guided missile designed for use by carrier-based Navy aircraft and shore-based Marine planes. It is 11 feet long, weighs 540 pounds and is relatively inexpensive, accurate and simple in design. It is intended for use against comparatively small targets—pillboxes, tanks, truck convoys, bridges, railroads and yards.

• **Corvus**—For more on this brand new guided missile turn to page 64.

GONE — Air-to-surface guided missile Petrel (below) is out of production and turned over to reserve Fleet.



REGULUS I, Navy's versatile surface-to-surface missile, is fired from many ships including cruisers, carriers and subs.



Navy Arsenal Packs

ALTHOUGH THE GUIDED missile is now in service on board many Navy vessels, other forms of ordnance, such as *guns, torpedoes, mines, depth charges* and *bombs* will continue to be important for many years to come. It has been estimated, for example, that at least 90 per cent of the Navy's guns will still be in service until 1962.

The 5-inch 38-caliber gun of World War II is still considered an accurate and reliable weapon against aircraft and surface targets. Since World War II, the 5-inch 54-caliber, the 3-inch 50-caliber and the 3-inch 70-caliber guns have been installed in certain ships. All are rapid-firing, double-purpose guns.

Although the gun cannot match the missile's potential for defense against high-speed, high-altitude aircraft, it is expected to remain an extremely valuable weapon for other purposes. The currently installed gun weapon systems are considered to be highly effective for defense within their respective envelopes of fire.

Since these weapons are going to be with us for some little time, here's a brief informal rundown which will enable the Navyman who isn't an ordnance expert to understand them just a little better.

When referring to guns, "caliber" and "calibers" are two terms which,

together, tell the gun's size. *Caliber* refers to the diameter of the bore (inside of the barrel). *Calibers* is a term that applies to the gun's length. Take a 5-inch 54, for example.

The bore is five inches, the length is five inches times 54, or 270 inches, or 22 and one-half feet. Inconsistently enough, you refer to it as a 5-inch 54, or, as mentioned earlier, 5-inch, 54-caliber (not calibers). Two guns, originally of European design, are designated by the bore diameter in millimeters, that is, the 40mm and the 20mm.

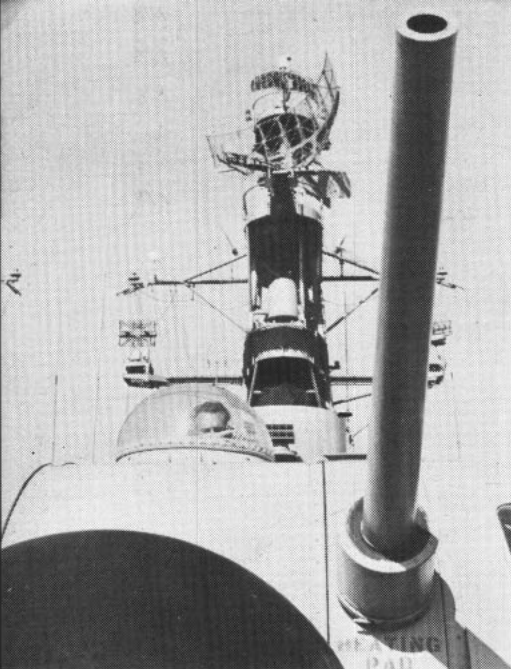
Small arms and machine guns with bores of an inch or less in diameter are designated by caliber alone which is, however, based on the decimal system. A .50 caliber machine gun has a bore one-half (or .50) inch in diameter. Then there's the .45 Colt automatic pistol, the .30 Browning automatic rifle and the .30 M1 rifle.

As you probably know by now, the 16-inch 50 big boys found only in battleships have been limited in their use by the advent of more sophisticated ordnance, in that these batteries are installed in Reserve Fleet battleships for possible use in shore bombardment for close troop support in any future brush wars.

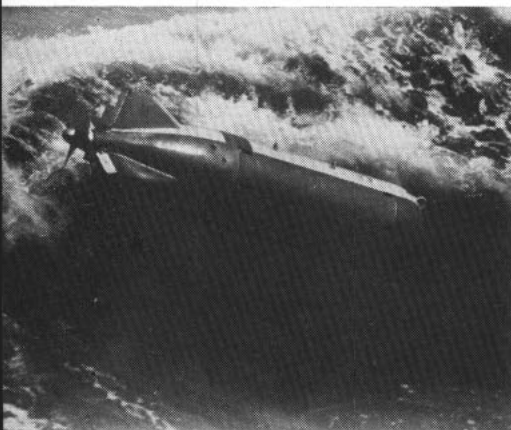
The largest guns you'll find in active service today will be the 8-inch 55 on heavy cruisers. Light cruisers boast 6-inch 47; 5-inch 54 will constitute the main battery on board destroyers and some attack aircraft carriers. The 5-inch 38 will be found on cruisers, destroyers, aircraft carriers, large amphibious ships and auxiliaries. You will find the 3-inch 50 on most all combatant ships and auxiliaries. These are either slow-fire or rapid-fire mounts.

The 3-inch 70 is limited to two destroyers, four frigates and the tactical command ship *Northampton*. The 40mm guns have generally been replaced by 3-inch 50 rapid-fire twins in some destroyers, cruisers, carriers and battleships. At the same time, 20mm guns have been removed from all large combat and auxiliary ships.

Guns are also classified according to the method of loading and firing. Most major caliber batteries are non-automatic; however, in *Salem* class cruisers and *Worcester* light



GUN HO — Guns like this one have place in missile Navy. Below: Acoustic torpedo already has a successor.



OFF IT GOES — Weapon Able, a long-range antisubmarine rocket has been with Fleet several years. Carries heavy pay load of conventional explosives.



Punch & Versatility

cruisers we have rapid-fire automatic 8-inch and 6-inch turrets, respectively. The 5-inch 54s in DLs, 931-class destroyers and new carriers are fully automatic rapid-fire guns.

If you're interested, you'll find thick volumes devoted to ordnance: fire control, types of ammunition, powder, projectiles, primers, fuses and handling—all beyond the scope of this discussion. But you can be sure that Navy's ordnance experts are exploring its potentialities in all its forms.

Take the *torpedo* as another example. With only a slight strain, a torpedo might be considered as an underwater guided missile and it, too, has been with us for quite a while. The torpedo may be divided into two types—surface- (and air-) launched and submarine-launched.

The surface Fleet is equipped with acoustic-homing torpedoes capable of tracking and sinking submarines. Because surface vessels must carry much new and heavier equipment, the size and weight of surface-launched torpedoes and their launchers have been greatly reduced since World War II.

The Mark 43, for example, was originally constructed to meet the need for aerial torpedoes, but later was found equally easy to launch from surface ships. It is now operational in the Fleet for both anti-submarine planes and destroyers. It weighs only about one-eighth that of a World War II torpedo.

The Mark 37 torpedo is characteristic of today's weapons. It is an acoustic-homing torpedo and though primarily an antisubmarine weapon, can also be used for defensive purposes. One of its most significant features is its ability to ignore many types of counter-measures.

Emphasis in the development of weapons for submarines shifted during World War II. The enemy submarine, as well as the surface ship, became a primary target. As submarines increase their range and independence of support, they become an ever more powerful force. Technological advances have speeded up the development of new types of mines and have permitted the modernization of older, still-serviceable types.

Submarines are also capable of

launching various types of underwater *mines*. One of these is the bottom mine (Mark 49), which falls to the bottom when launched. It is used in relatively accessible shipping lanes and areas where a large number of mines is required.

The moored mine falls toward the bottom where its anchor allows a measured amount of cable to be reeled out. The Mark 10 and the newer Mark 57 are influence-fired by passing vessels.

There is also a mobile mine used for accurate mining of dangerous and well guarded harbors.

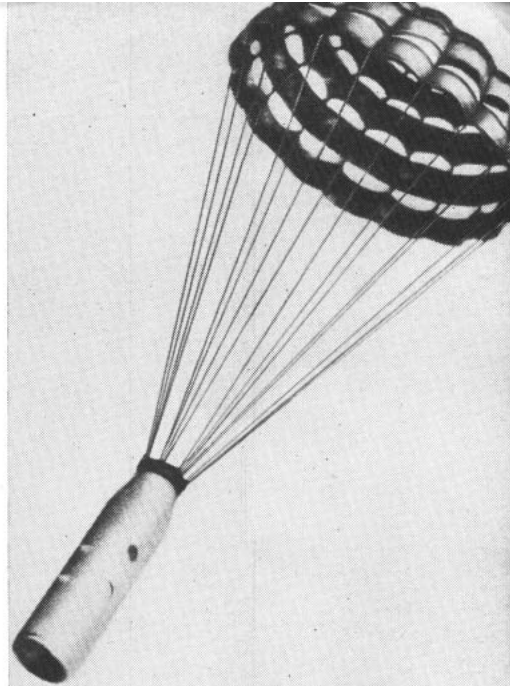
Most of the *depth charges* developed during World War II still meet the needs of today's Navy. However, two are currently under development which will defend harbors and inland waterways with relatively light explosive charges. These are the picket boat depth charge and depth charge Mark 15, Mod 10.

The latter provides the Navy with a safe, hand-launched depth charge for breaking up frogman attacks.

This discussion should not close without a mention of *Weapon Able*, a long-range, antisubmarine rocket which has been in service in the Fleet for several years.

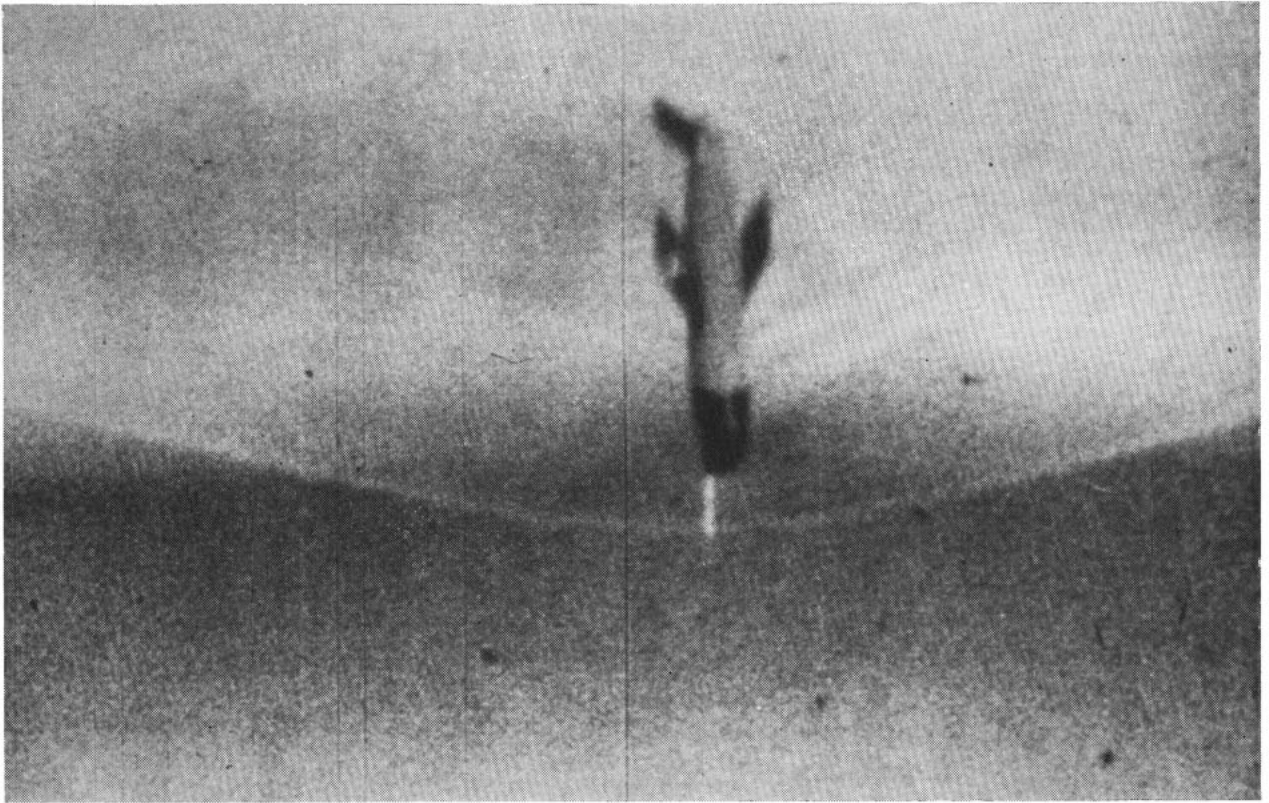
You'll hear more in future issues of ALL HANDS of such items as *Betty*, the atomic depth bomb, and of *Rat*, the rocket-launched homing torpedo.

IT'S A HIT—New lightweight homing torpedo has been developed for surface launching. Here, the torpedo leaves firing tube aboard USS Tweedy (DE 532).



CHUTE THE WORKS — Air-launched mine dropped with new drag chute. Below: Depth charges are still potent.





Greater Production Okayed for Regulus II

An additional contract for approximately \$26.2 million has been awarded for further evaluation and production of the *Regulus II*. Included in the contract are provisions for spare parts and special support equipment estimated at an additional 7.4 million dollars.

Regulus II is the same guided-missile which was fired successfully late in 1957 at Edwards Air Force Base in the first launching with rocket-boosters of the new 11-ton 57-foot surface-to-surface weapon. The 1000-mile-plus-range missile, designed to exceed speeds of Mach

2, was fixed under a close approximation of shipboard conditions, making this test a major milestone toward introducing *Regulus II* to the Fleet as successor to *Regulus I*.

Regulus II is destined to go on board submarines such as the Navy's first nuclear-powered missile sub, USS *Halibut*, SSG(N) 587, now under construction, and to fit into the weapons system concept of submarines in both oceans which can rise to the surface and within minutes launch a nuclear warhead missile and submerge immediately, while the missile is guided on to

its target hundreds of miles away.

The first order placed for *Regulus II* missiles was dated December 1956.

★ ★ ★

Traveling at Mach 1.1

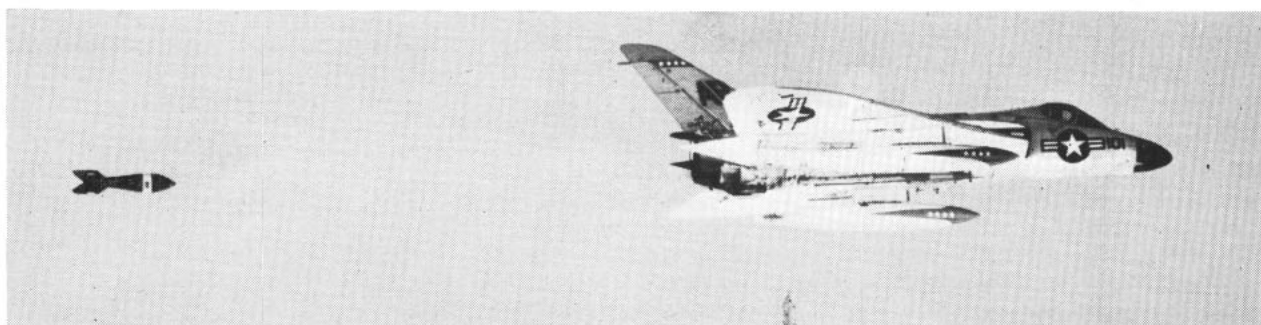
"Breaking the sound barrier" has almost become a household expression in the last few years and many people, either in the military service or living near a military air installation have even heard aircraft breaking through this barrier with a terrific explosion. But how many of you have ever seen a picture of a "sound barrier," or a supersonic shock wave, as it is known in technical circles.

Photographs of shock waves have been taken in experimental wind tunnels, but this picture of a *Regulus I* guided missile is believed to be the first ever taken of a shock wave forming in actual flight.

The *Regulus* is shown in a terminal straight-down dive on a target and the wave built up ahead of the missile's nose and its angle indicates a supersonic speed of Mach 1.1. Mach 1 is equal to the speed of sound which means that the missile was traveling well over 700 m.p.h.

UP and AT 'EM — *Regulus II* takes off on test flight that simulated shipboard firing. It will be used by USS *Halibut*, SSG(N) 587, now being built.





Tow Targets for Navy's Supersonic Jets

THE NEW ORDNANCE of today's Navy is only as good as the men behind it. This in turn depends on how well the Navyman has been trained. As weapons and planes become faster and more accurate new training devices must be developed.

Here is the latest version of the old target sleeve used for so many years to train aerial gunners and pilots. This high speed target, called the Delmar Tow Target System, has been given a thorough check out by Fighter Squadron 101 located at Cecil Field, and it was tested operationally at the Naval Air Test Center, Patuxent River, and on board the carriers *uss Forrestal* (CVA 59) and *uss Saratoga* (CVA 60).

The "Grim Reapers" undertook the project of determining for the Navy the problems and their solutions in using this bomb-shaped target for training all-weather intercept tactics in the F4D-1 *Skyray*. The important advantages of Delmar are its speed and ability to be reeled out to any length up to 20,000 feet behind the towing aircraft. A typical towing condition tested by VF 101 with air-to-air radar rocket intercepts

is with the target trailing 10,000 feet behind the tow plane at Mach .85 at an altitude of 40,000 feet.

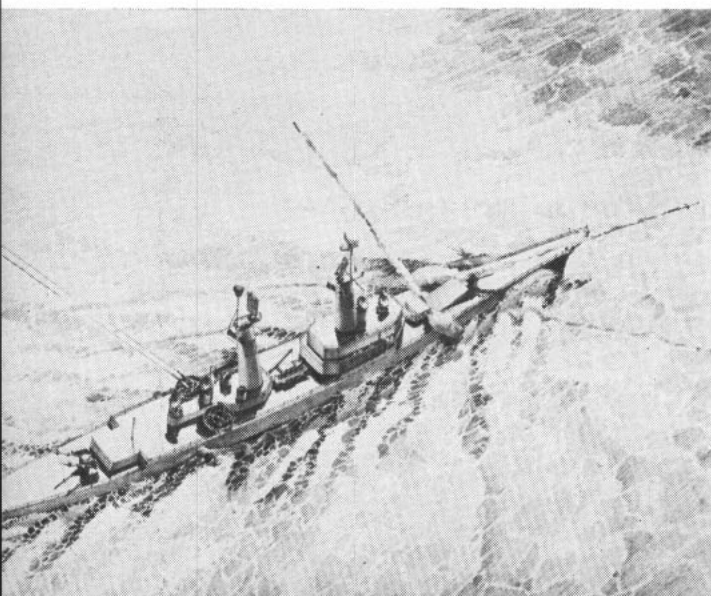
A special tow rig for the new target was developed within the "Grim Reaper" squadron to fit the F4D-1 *Skyray*. This rig and the target received further operational

tests at sea on board *uss Saratoga* (CVA 60) while she steamed to NATO exercises.

Above: Skyray streaks by with Delmar target. Top (lower): Target is reeled out during evaluation tests. Below right: Close-up view shows bomb-shaped target on F4D-1.



A Thumbnail



TOMORROW—Drawing shows ordnance of future (DLG).

THE MUSHROOM CLOUD of the atomic blast—the streaking vapor trail of a ballistic missile—and the smoky blast-off of a Navy rocket—these are the symbols of power of today's and tomorrow's Navy. They are potent and awe-inspiring symbols that stand for protection of the ocean's freeways, and they pack power-for-peace.

Not so long ago the effectiveness of the Navy gun depended on the impact of the round shot. In the Navy of the future the blast of an atomic warhead from an anti-aircraft missile on a ship standing guard off the U. S. coast could destroy the threat of a formation of planes heading inland. Or a missile moving hundreds of feet beneath the surface of the sea might be the weapon of destruction aimed against an enemy submarine.

These are the weapons the modern day gunner's mate sees in the new Navy. He still works with a wide variety of conventional weapons ranging from the anti-aircraft guns and the 8-inchers of the heavy cruiser to the smaller automatic ordnance, but he sees the 16-inch rifle moving into mothballs with the last of the active battleships. Many of the men who wear the crossed cannons on their arm have already entered the new field of guided missiles and rockets which have opened new horizons for the development of naval weapons.

The missiles and rockets are the latest addition to a list of nautical weapons whose range has grown from a few feet—the distance a man might hurl a flaming grenade—to hundreds of miles.

Perhaps the first piece of naval ordnance was a flaming spear or a club carried by a cave man as he floated down a river on a log or raft thousands of years ago. With this crude instrument he fought off prehistoric monsters or other cave men encroaching on his territory.

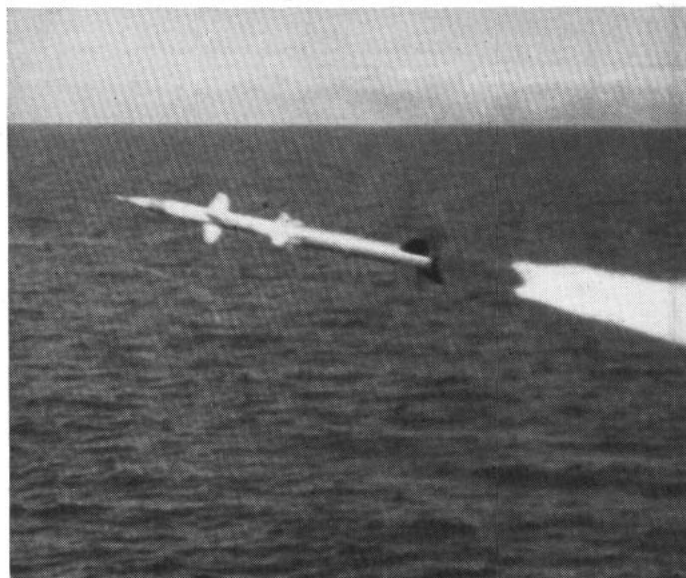
However, probably the first recorded chapter of this development story was written with "Greek Fire" by the naval vessels of the Eastern Empire in the 7th century. Engraved on the scorched hulls of enemy ships was the tale of this incendiary liquid made of a blend of sulphur, oil, pitch and other substances.

The so-called gunners of the era poured the flaming Greek Fire from pots on to the hull of the enemy ship,

pumped it through a siphon into the midst of the embattled vessel, tossed makeshift grenades or shot arrows dipped into the burning fluid. Water was no defense against "Greek Fire" so vinegar, wine and sand were used as extinguishing agents.

Greek Fire was the first step forward in the long march of progress to be made by gunpowder-like materials even though the Chinese had used an explosive powder in rockets as early as 3000 B.C. (They were rockets used for celebrations.) It was not however, until the 14th century that the age of cannons arrived. Guns were manufactured in Flanders in 1314 and exported to England and about 1338 the Pot de Fer (See page 00) was developed to hurl stones and arrows.

Gunpowder had become a source of power replacing stretched hide and manpower of bow and catapult.



TODAY guided missiles are active members of Fleet.

The history of the gunner at sea is a sketchy one from 1250 to 1350 A.D., but many battles were fought in the Mediterranean in which cannons were used. In 1350 it is recorded that the navies of Tunis and Seville clashed, with cannons playing a leading role. Soon they were found on all warships.

On the beach, cannoning was making rapid advances. The "great bombard of Ghent" was built about 1382 by the Flemish who had turned gun making into an art. The Ghent gun had a bore of 25 inches and fired a granite ball weighing 700 pounds. About the end of the 14th century the first rapid fire guns appeared in Germany under the name of "death-organs." Numerous barrels were placed side by side on a wheel mounted carriage. One death-organ of 33 barrels is mentioned in historical works.

Most guns of that era were built up of layers of iron bars and rings welded together, but the bronze cannon began to gain favor. Mohammed II cast some bronze guns in 1453 that equaled the size of the "great bombard" and used them in the attack on Constantinople.

Improvements in iron smelting in the 15th century made possible stronger guns and cast iron shot began

History of Naval Fire Power

to replace the stones used in cannons up to that time although some stone projectiles were still used in the early 19th century. Mortars of three and four caliber barrel lengths (caliber is the diameter of the bore) were used alongside breech loading cannons of 60 calibers.

As fast as advances were made, nautical gunners took advantage of them. At first a large bombard was mounted in the bow of a galley to supplement the ram. Swivel pieces were later installed in other areas to repel boarders and keep order among the slaves manning the oars. In the Atlantic, cannons were installed around the perimeter of the ship to give fire in all directions.

The battle of Lepanto in 1571 saw six large Venetian sailing ships with heavy guns stand off a large Turkish force of galleys carrying light guns. The sailing ships

plan for casting the gun solid and then boring it out. An Englishman founded the science of ballistics with his studies and argued for a short barrel, large bore, rifled cannon. Some decades later a Scottish firm built the "Smasher," an 8-inch rifled cannon firing a 68-pound ball which was ideal for upper deck gun mounts.

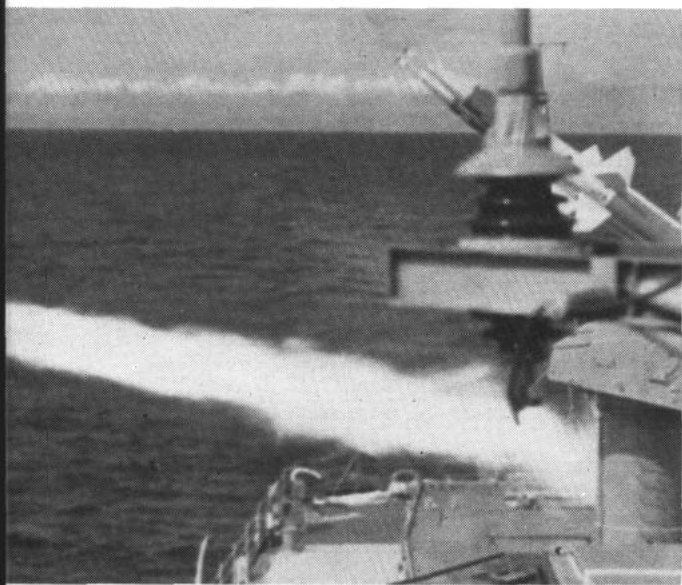
Work on gunsights began again and in 1801 it was proposed to Horatio Nelson that gunsights allowing for range be used. He said he would examine them but hoped that he would never be so far from an enemy as to make them necessary in battle. During the war of 1812 American officers devised sights of improved patterns which, along with training, accounted for the superiority of American naval gunnery in the war.

After this war ordnance studies moved ahead, but the people were tired of war and new ideas were slow in being accepted. In 1821, General Henri Paixhans, a French artillery officer, advocated the use of powder-filled shells instead of the solid round shot and the use of single caliber guns aboard ships. His first proposal was not generally adopted until the appearance of *Monitor* in the Civil War and his last idea lay dormant until 1905 when the U. S. Navy accepted the idea of the all-big-gun battleship.

In the period before the Civil War, United States Navy gunners watched developments in Europe. The first large shell guns of the Paixhans design were completed in 1824. For many years mortars had fired thin walled shells, but they were not designed to penetrate as were the Paixhans types.

Percussion locks were fitted to the guns of *uss Vandalia* in 1828, but were not generally adopted until 14 years later. Better gunpowder was developed and gun mounts, locks and sights improved.

YESTERDAY'S naval guns called for close-in tactics.



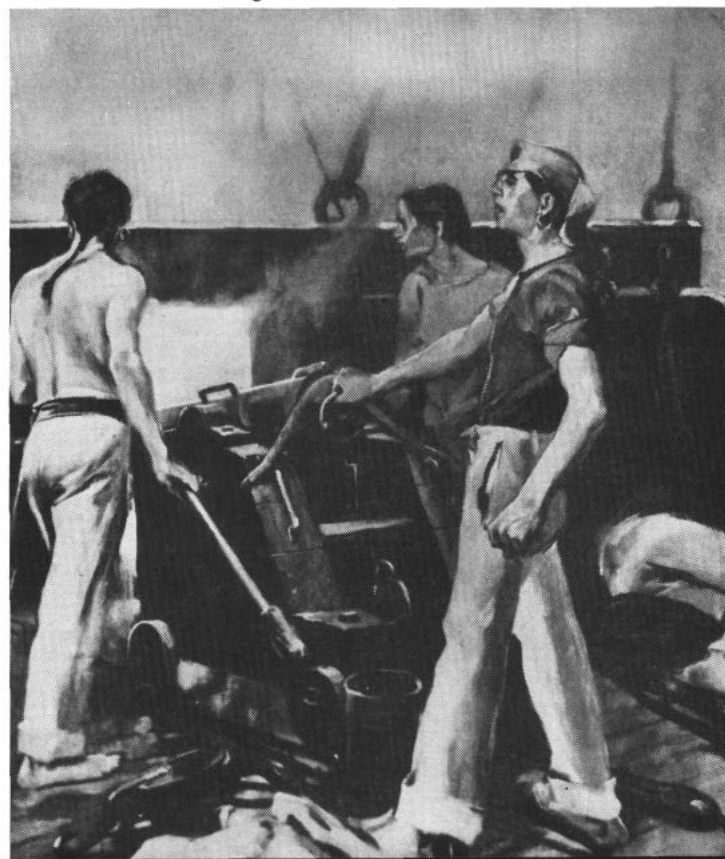
TERRIER missile is fired from *USS Canberra* (CAG 2).

with heavy guns won the day. Seventeen years later another chapter in the development of naval ordnance was written when the British defeated the Spanish Armada. The English with their heavy guns crushed the Spanish force, spelling the end of the galley-fighting techniques and opening a new era of armed navies controlling the destinies of the world.

Along about this time more attention was placed on the accuracy of the gun. Niccolo Tartaglia devised the "gunners quadrant", a device resembling a carpenter's square with a graduated quadrant secured to it. This was used to determine elevation while simple notches on the barrel were used to assure proper train.

In the 17th century the English Navy boasted of four different types of cannon: the long range culverins, large caliber cannons of battery, stone ball firing petereros, and various types of small pieces. Each came in three different lengths, extra-ordinary (very long), ordinary (medium length) and bastard (very short). Later on this was reduced to a long type (18-25 cal.) and the short (15 cal.) model.

The dawn of the 18th century brought many improvements to naval ordnance. The French devised a





IN WORLD WAR II the rocket became an important weapon for naval aircraft and amphibious vessels.

The adoption of the penetrating shell guns brought about the first armored ship, designed as a defensive measure. In an attempt to find a way to penetrate the armored vessels, ordnance experts took advantage of the elongated projectile now in use and the superior powder and metal being produced, and developed anew the rifled cannon. True, rifling had been used as early as the 14th century, but it was only in 1850 that it became truly practical. In 1854, the French and other European navies adopted the 6.5-inch cast iron rifle.

The use of rifled guns which were hard to load via the muzzle, caused new attention to be turned to developing a breech system. The Wahrendorff design of a sliding-wedge breech block was announced in 1846. Later the French came out with an interrupted screw system patterned after an American invention. Both systems were rendered practicable by the Broadwell ring, invented by an American officer of that name, which prevented the escape of propelling gases.

The new gunpowders and more efficient rifling caused a search for new ways of constructing stronger guns. John Calbraith Dahlgren, termed by many the father of modern gunnery, was among the first to recognize this need. He designed a gun based on the theory that the most strength should be concentrated at the powder chamber end. Consequently his guns with their added

masses of metal surrounding the powder chamber resembled soda pop bottles.

His first guns had 9-inch bores. He went on later to build 11- and 15-inch weapons and experimented with a 20-inch gun. During this period Dahlgren urged the use of rifling on U. S. Navy guns and designed the first practical gun sight.

The smooth bore iron shell gun reached the ultimate point in its development during the Civil War. But in the same war the *Monitor* and *Merrimac* battle caused a revolution in the development of offensive and defensive power which not only marked the end of the traditional smooth bore gun, but is continuing to be felt in our atomic age.

New powder was developed that burned slower than the black powder which had been in use during the first 600 years of firearms. The new materials burned slower but developed more power than the old formulas. To use this powder efficiently it was necessary to build guns ranging up to 35 calibers in barrel length.

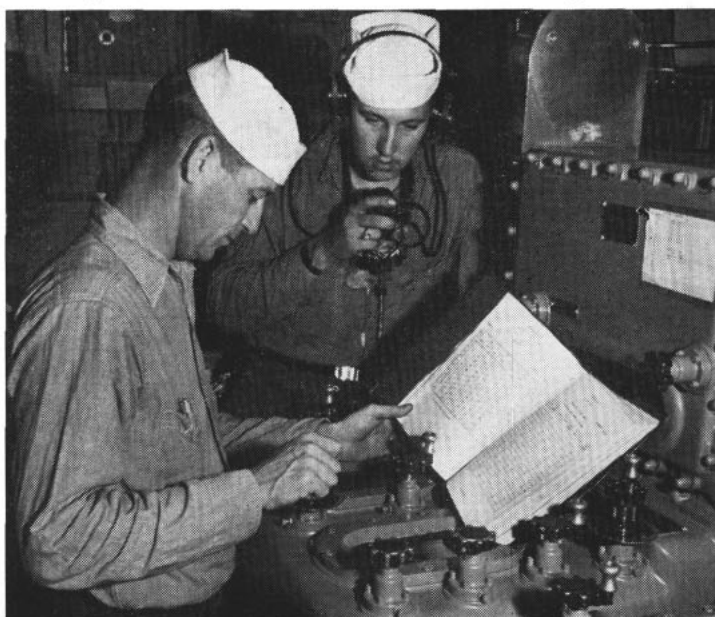
In 1870 Hotchkiss, an American ordnance engineer who established a factory in Paris, began to produce rapid fire guns. His first orders for the one-, three- and six-pound guns came from the U. S. Navy. The breech mechanism of these guns was applied to other weapons up to 4-inch bore, but the breech mechanism for guns with a caliber of 8-inches and more, were still inefficient. For example, in 1884 the average time for loading a 12-inch gun was four minutes. In 1914, it was less than 20 seconds.

It was in the early 20th century that the first center line turrets evolved as the main battery of capital ships. *Monitor* had demonstrated the effectiveness of the spinning turret in the famous battle on Hampton Roads.

With the coming of the standardized main batteries for ships, improvements were registered in range-finding, spotting of hits and fire control equipment, which initiated a rapid extension of battle range. These developments called for bigger guns mounted on bigger ships and by World War II our 45,000-ton battle-ships carried 16-inch guns and the Japanese *Yamamoto* class were armed with 18-inch weapons, the ultimate gun in size to be mounted afloat to date.

World War I brought with it torpedoes used by submarines and some surface ships. Depth charges were developed to combat the submarines. The famous "Y"

SIGHTING DEVICES had to advance with guns. Left: three-inch-fifty is trained. Rt: FTs work on automatic gear.



guns and depth charge racks of 1917 and 18 helped achieve victory over the first U-boat fleet while the "K" guns of World War II were instrumental in battling the second fleet of U-boats to endanger our control of the seas. Future underseas threats will be met with homing torpedoes, rocket-powered depth charges and hedgehogs and other weapons.

Guns were assigned dual roles in the defense of the ship during World War I. Their barrels not only trained toward the horizon for conventional sea battles, but also aimed skyward to ward off enemy aircraft which began to make their appearance over the Fleet. Giant naval guns even went ashore during World War I where their ability to send a heavy projectile over a long distance was utilized in France. These were 14-inch guns mounted on special railway equipment for mobility.

In 1918 the 16-inch, 50-caliber gun was perfected and placed in use aboard our larger battleships. It remained the principal battleship weapon in World War II. When the war broke out with its aerial threat posed against surface ships, a host of new weapons were made available to the gunner's mate. The 20mm rapid fire cannon and 40mm weapons occupied every square foot of available deck space to provide protection against enemy bombers.

In some cases their barrels were swung on target by the invisible beam of radar while in others the squinting eye of the gunner peering through an open sight brought the gun to bear. Friendly planes ranged over the horizon to spot the effectiveness of the 16-inch guns firing shells (weighing more than one ton) nearly 30 miles.

The end of the war found the rocket and guided missile achieving an importance in naval ordnance which also had grown to include the wide variety of weapons assigned to aircraft.

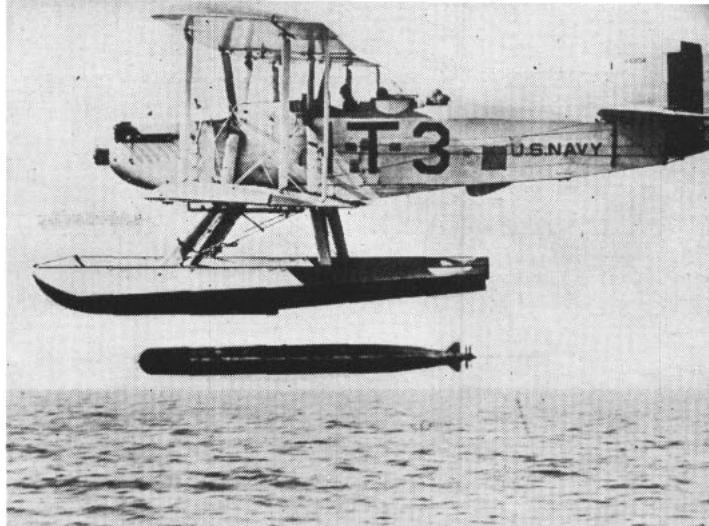
After the war conventional armament moved into a period of rapid fire emphasis. The 3-inch gun with a rate of fire of more than a round a second replaced the 40mm antiaircraft mounts on some ships. Five-inch guns were made semi-automatic along with rapid firing 8-inch guns, but as the speed of sound was approached and exceeded by aircraft the need for high speed missiles became increasingly apparent.

A host of missiles and rockets for various purposes arrived on the scene and the schedule of future arrivals is still heavy. Surface batteries are being replaced by the *Regulus I* and *Regulus II*. Antiaircraft guns are slowly giving way to the *Terrier* and *Talos*. Airplanes in future conflicts may battle one another with *Sparrow* and *Sidewinder* missiles and launch the *Bullpup* against surface and subsurface ships. And the heavy battery of longer range ballistic missiles is just around the corner along with shorter range rockets and guided missiles for surface to surface warfare.

The development of naval gunnery has run in a true circle with the rocket once again achieving the importance that it held centuries ago. In this modern era the Greek Fire is the flaming napalm bomb. The cast iron smooth bore cannons have fallen victim to the rifled main batteries—themselves now being replaced by the guided missile.

This age of atomic energy will give new emphasis to the development of naval ordnance and open even wider horizons than those dreamed of by ordnance experts as they watched an ironclad with a revolving turret steam into battle.

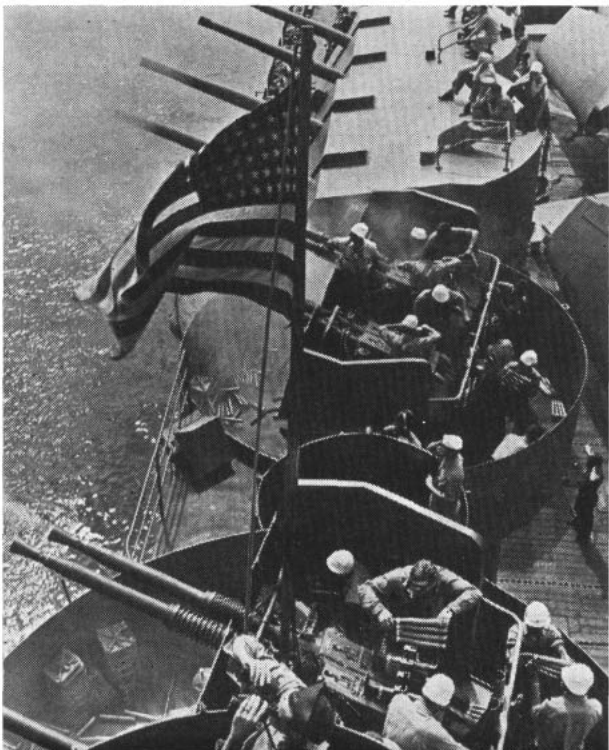
—William Prosser, JOC, USN.

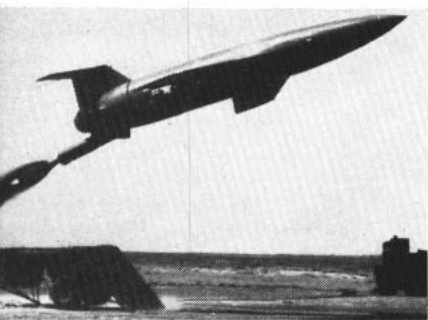


WORLD WAR I and post-war years brought with it the torpedo for ships. Here, torpedo goes airborne in '30s.

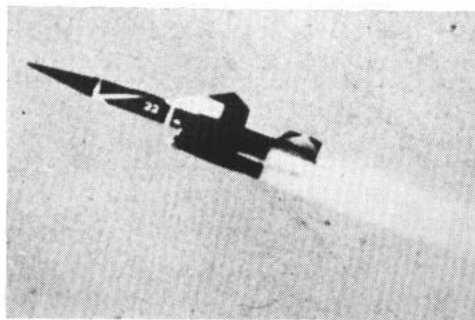


ONE AND TWO—Depth charge is dropped in 1918. Below: Rapid firing 40mm guns practice in 1944.





Matador



Bomarc



Falcon

HAVING TROUBLE KEEPING up with the latest scoop on missiles? You're in good company. Developments are coming so rapidly that we are all confused. For your guidance, here's a brief rundown on what the Army and Air Force are doing.

ARMY

- **Nike-Ajax** is the Army's first supersonic antiaircraft guided missile designed to intercept and destroy the enemy target regardless of evasive action. *Nike* guided missile units are now located around industrial, highly populated and strategic areas of the United States. *Nike-Ajax* is a missile about 20 feet long and about one foot in diameter, with two sets of fins for guidance and steering. It is boosted to supersonic velocity by a solid-propellant booster and maintained by a liquid sustainer motor. The missile and booster weigh more than one ton. Speed, range, altitude and lethality of *Nike-Ajax* can meet an attack from any direction and its kill potential has exceeded expectations.

- **Corporal**, equipped with either an atomic or conventional type warhead, is capable of engaging targets more than 75 miles away. The weapon gives the field commander great firepower on the battlefield and enables him to strike selected targets deep in enemy rear areas. *Corporal* follows a ballistic trajectory during most of its flight. Weather and visibility conditions place no restriction on its use. The propulsion system uses a liquid propellant rocket motor. It travels through space at several times the speed of sound.

- **Sergeant** is one of the Army's newer projects. A ballistic guided missile, it will be the successor to the four-year-old *Corporal*, with improvements over the older weapon's power, range and accuracy. It is unaffected by electronic countermeasures.

- **Redstone** is capable of delivering both atomic and non-atomic projectiles. It is the largest surface-to-surface ballistic guided missile successfully fired in this country. Activation of the first U. S. Army unit to fire the *Redstone* was announced 14 Mar 1956. The Army plans to use surface-to-surface artillery missile units armed with *Redstone* and other Army missiles to extend the range and firepower of artillery cannon.

- **Jupiter** is the Army's intermediate-range ballistic missile which provided the first stage of the rocket that tossed into an orbit the United States' pioneer earth satellite. *Jupiter-C* is about 70 feet long, and carried a satellite pay load of about 30 pounds.

- **Lacrosse** is a highly accurate general support field artillery guided missile for use in close tactical support of ground troops. It is an all-weather guided missile which will replace and supplement conventional artillery. Its propulsion system uses a solid propellant rocket motor. The *Lacrosse* system includes the missile, a launcher mounted on a standard Army truck and other ground equipment.

- **Dart** is a guided anti-tank missile, solid-propellant rocket propelled, designed for use by front-line troops. It carries a warhead capable of defeating the heaviest known enemy armor, and delivers this warhead with pinpoint accuracy. *Dart* can be launched by a lightweight launcher from a variety of vehicles.

- **Nike-Hercules** will be the nation's second land-based combat-ready surface-to-air guided missile system to be placed by the Army into the air defense system of the United States. It can engage and destroy at much longer ranges and higher altitudes than *Nike-Ajax* either single, or formations of, aircraft of the present or foreseeable future. The dart-shaped missile itself is 27 feet long; the booster is 14.5 feet long. The atomic warhead is designed to make sure that detonation can only take place at altitudes high enough to prevent damage to our own countryside.

- **Hawk** is the Army's newest air defense weapon capable of carrying a modern warhead and of destroying attackers flying at low altitudes. When placed in service, it will complement the defense against high-level air-attack provided by the Army's *Nike* system. The system is capable of operating both at fixed Army installations and with combat troops in the field. The missile uses a solid fuel propellant and is approximately 17 feet long and 14 inches in diameter.

- **Nike-Zeus** is a surface-to-air missile system under development to provide an anti-missile missile defense against intercontinental ballistic missiles equipped with

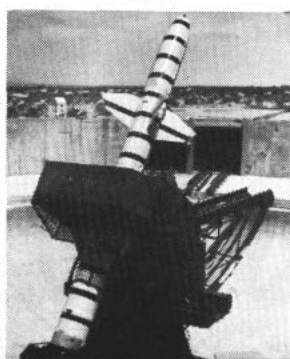
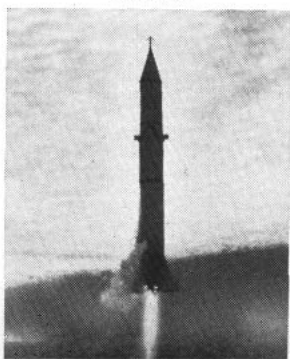
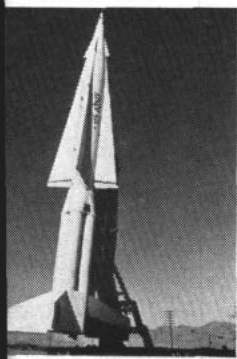
Nike-Hercules

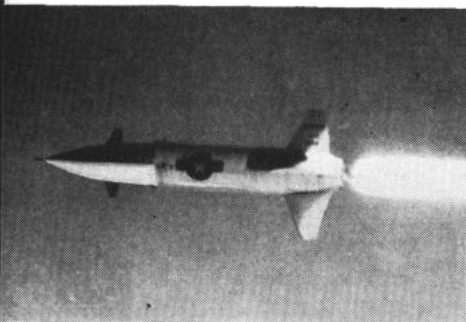
Redstone

Talos

Jupiter

Hawk

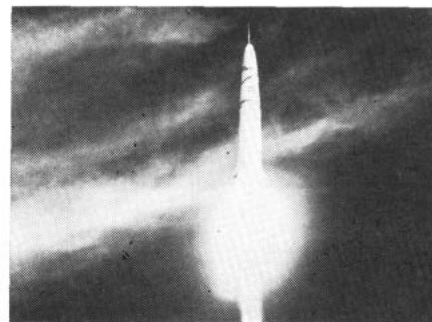




Rascal



Snark



Thor

atomic warheads that could strike the United States.

- **Talos** Defense Unit, a land-based version of the Navy's *Talos* Shipboard Missile System, was turned over to the Army by the Navy for evaluation.

AIR FORCE

- **Matador** is a tactical missile in the subsonic range (650 mph). It has a wing span of 28.7 feet, a length of 39.6 feet. Ground-launched by a rocket booster from a portable launcher, it is powered by a jet engine and may be controlled electronically in flight by ground personnel. It is capable of delivering conventional or nuclear weapons hundreds of miles. Its operational altitude is above 35,000 feet.

The newest *Matador* development includes a self-contained navigation system.

Five Tactical Missile Groups now employ the *Matador* missile, of which three Groups are deployed in Europe. One unit has been assigned to Taiwan (Formosa).

- **Falcon** (GAR-1, radar guidance) (GAR-2, heat-seeking guidance) is a guided, airborne rocket in the supersonic speed range. It weighs slightly over 100 pounds, is approximately six feet long, and is powered by a solid propellant. It is fired and guided electronically. Designed for internal or under-wing installation, it can be carried in quantity by interceptor aircraft and launched miles from the target. It then "homes" automatically on its objective. During developmental tests, *Falcon* knocked down target planes without use of explosive warheads.

Falcon is now in operational units of the Air Defense Command.

- **Genie** is an air-to-air rocket with atomic warhead developed for air defense purposes.

- **Snark** is a long-range, strategic missile now in production, which will be assigned to the Strategic Air Command's first *Snark* missile unit in FY 1958. This will be the first U. S. intercontinental missile to be placed in operational use. It is designed to carry a nuclear warhead at high speeds and high altitudes against far distant targets by means of a self-contained

guidance system, operating independently of weather, day or night. A *Snark* traveled over a guided course for 5000 miles and was accurately placed on target.

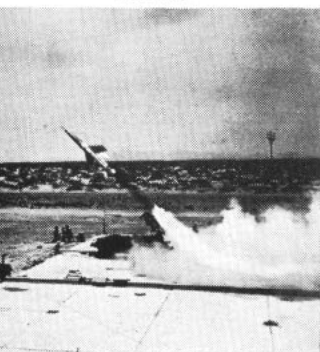
- **Rascal** is an air-to-ground guided missile. It is now in production for the Strategic Air Command's first *Rascal* missile unit, scheduled to be operational during FY 1958. It is 32 feet in length and four feet in diameter. This rocket-powered missile is designed for launching from B-47 Stratojet bombers at high altitude and high speed, and at such distances from the target that bombers and crews are not exposed to local defenses. In recent tests in New Mexico, four direct hits were scored on the target. The first *Rascal* has been delivered to Strategic Air Command.

- **Bomarc** is a long-range surface-to-air guided missile designed for air defense to engage and destroy the enemy far from his intended target. *Bomarc* is approximately 47 feet long with a wing span of about 18 feet. The missile weighs about 15,000 pounds. It is rocket-launched from a vertical position after which it cruises on twin ramjet engines at supersonic speed to its distant target. *Bomarc's* capability extends to extreme altitude. It is guided by electronic systems. *Bomarc* has been successfully tested in a series of launchings against high-flying drone aircraft far out over the Atlantic Ocean. It scored a "kill" more than 100 miles away after attacking it from above 60,000 feet. *Bomarc* will be assigned to the Air Defense Command where it will be used to defend large areas.

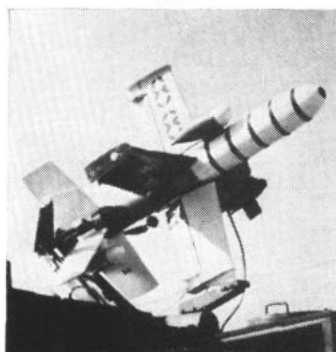
- **Thor**, Intermediate Range Ballistic Missile (IRBM). The inertial guidance systems are completely self-contained within the missile and cannot be jammed or deterred from a preset course. The *Thor* has been test fired successfully.

- **Atlas and Titan**—Intercontinental Ballistic Missiles (ICBM). *Atlas* is launched by rocket engines developing many tons of thrust and millions of horsepower within seconds, which impart speeds well above 10,000 miles per hour. *Atlas* is being tested at four facilities.

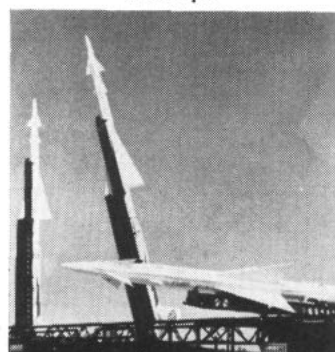
- **Wizard**, anti-missile missile for defense against intercontinental ballistic missiles. Under development.



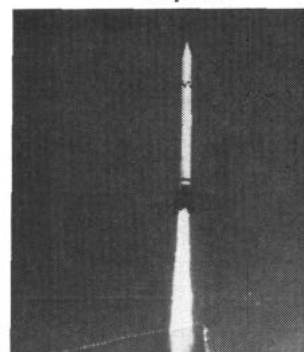
Lacrosse



Dart



Nike-Ajax



Corporal

LETTERS TO THE EDITOR

Homeward Bound Pennant for Crew

SIR: The *uss Chimon* (AKS 31) returned to San Francisco, Calif., on 22 Dec 1957 after a six-year tour of duty as supply station ship in Sasebo, Japan.

Before our departure from Japan the crew purchased a printed silk homeward bound pennant and a rubber stamp with the ship's name on it. The stamp also pictured Mt. Fuji and the Golden Gate Bridge.

After our arrival the pennant was cut up and stamped with the ships name and then distributed to the crew.—H.A.M., QMC, USN.

• Konnichi wa.

Welcome home, *uss Chimon*. Your tours of duty on a foreign station are reminiscent of those assigned to ships in the "old, old Navy" and your flying of a homeward bound pennant when you passed through the Golden Gate is a tradition passed down from the Fleets of yesterday.

For the younger members of our audience a homeward bound pennant is traditionally flown by a Navy ship returning home from foreign waters after an absence of more than one year. The pennant has a blue field at the hoist with the remaining portion divided horizontally into a red and white stripe.

The blue field carries the stars that represent the length of time the ship has been gone. One star is for the first year. An additional star is added for each six months after that. *Shimon* rated 11 stars in the blue field according to the formula set forth in "U. S. Naval Flags and Pennants Descriptions, Uses and Customs" (DNC 27).

The length of the pennant is governed by the number of officers and men in the ship who have been on duty out-

This section is open to unofficial communications from within the naval service on matters of general interest. However, it is not intended to conflict in any way with Naval Regulations regarding the forwarding of official mail through channels, nor is it to substitute for the policy of obtaining information from local commands in all possible instances. Do not send postage or return envelopes. Sign full name and address. Address letter to: Editor, ALL HANDS, Room 1809, Bureau of Naval Personnel, Navy Dept., Washington 25, D. C.

side the United States in excess of one year. Each rates a foot of pennant. Some ships have returned to the states with pennants so long that they were supported by gas-filled balloons or other methods.

When the pennant is divided, the blue field normally is given to the skipper of the ship and the remainder divided into equal portions for the crew.

Sayonara.—Ed.

Auxiliary Tug Takes on the ATFs

SIR: PacFlt ships have always been noted for miles steamed—because of the vast expanse of the "Peaceful Sea" and the distance between ports.

Two ships in particular—*uss Quapaw* (ATF 110) and *Mataco* (ATF 86)—have been filling the pages of ALL HANDS by taking bows on behalf of the Pacific sea-goers. *Quapaw* bragged about steaming 19,666 miles in 1956 and *Mataco* boasted of traveling 24,092 miles in the same year.

These records are good and the men should be proud. But, I'd like to remind the PacFlt sailors that we have a two-ocean Navy, and East Coast ships also do a lot of steaming of their own. Permit me to mention my own ship's record. She is *uss Penobscot* (ATA 188)—not a big, luxurious and comfortable ATF, yet in the first 11 months of 1957 she steamed 26,970 miles. This includes a trip across the Equator, which is quite a novelty for an Atlantic tug.

Furthermore, we have a good ship and an alert, sharp and proud crew, plus the curiosity to ask: "Can any other ATA top us?"—R. L. Weinrich, QMC, USN.

• Right now, we wouldn't know whether or not your claim can be topped. However, we do know it would be almost impossible to match the finesse and diplomacy you used in your letter while cutting the big tugs down to size. It would be nice if all the other claims we receive were as skillfully presented as yours.—Ed.

Three Questions—Three Answers

SIR: Could you provide me with information on (1) how assignments are made to special weapons training; (2) how it's possible to get Photographic Interpretation School; and (3) the scoop on transfers for humanitarian or hardship reasons.—C.C.M., EMC, USN.

• Taking these in the order in which you asked, here are your answers:

You can find all the answers covering the provisions for assignment to special weapons training in BuPers Inst. 1306.46A. Since you have indicated an interest in this type of duty, you should indicate this preference on your Shoreway data rotation card and, if you desire, request assignment from the Chief of Naval Personnel (Attn: Pers B-21211), via your CO.

Information concerning Photographic Interpretation School is contained in the Catalog of U.S. Naval Training Activities and Courses, NavPers 91769-C, page 26. Personnel of all ratings, second class and above, are eligible but they must have a combined GCT and ARI test score of 110 and be physically qualified.

Normal transfers for humanitarian or hardship reasons are for a four-month period. For further information on this type of transfer, you should check BuPers Inst. 1306.24A. The step-by-step procedures to be followed in preparing a request of this nature are outlined in paragraphs 6(a), (b) and (c). Upon completion of humanitarian assignment, you would be reported available to the appropriate type commander for assignment. Again, under normal circumstances, you would not be returned to the same command in which you served before you were issued humanitarian shore duty.—Ed.

Cost-of-Living Allowances

SIR: How come some overseas areas are entitled to cost-of-living allowances while others are not. Just how are such allowances determined, and by whom?—W.V.C., LTJG, USN.

• A cost of living allowance is granted for areas where the cost of living is too high to be supported by regular pay and allowances. They are determined by the Per Diem, Travel and Transportation Allowance Committee based on cost of living reports submitted by overseas activities, in accordance with Appendix C of the Joint Travel Regs.—Ed.

Photographic Intelligenceman

SIR: I'm interested in this new rate of Photographic Intelligenceman. Can you pass along any information on who is going to be eligible and what the qualifications will be?—R.E.R.,—QM1, USN.

• Right now, there isn't too much information on hand to pass along. We do know that the first examinations will be conducted in August 1958. But, as to who will be eligible and what the qualifications are, you'll have to wait along with the rest of us for the instruction to come out.—Ed.

Did Cimarron Have a Load On?

SIR: A friend of mine claims that he witnessed the old *uss Saratoga* (CV 3) take on the full amount of cargo (oil, gasoline, etc.) of *uss Cimarron* (AO 22). I claim this couldn't be so. Can you settle this for me?—J.A.W., ADC, USN.

• *We'll do our best. The fuel oil capacity of Saratoga was 9374 tons and, since the ship's cargo capacity of Cimarron is considerably in excess of this, it would not have been possible for Saratoga to have taken on the entire fuel load of Cimarron.*

However, if at the time of the refueling, Cimarron had less than 9374 tons in her tanks and providing the black gang of Saratoga called over to "Give us all you have," it would have been possible for Saratoga to take Cimarron's then entire amount of fuel. All clear?—Ed.

Figures on Heavenly Body

SIR: I have a suggestion you may want to pass on to your Taffrail readers.

According to the equation given on page 64 of your December issue, I find that a velocity of only 9.9×10^{-9} miles per hour is required to maintain a 22-pound satellite in an orbit 300 miles above the earth. It strikes me that this is slow enough for the heavenly body to meet itself coming in the opposite direction.

However, if your mathematician friend who gave you the equation had written it as:

$$\frac{mv^2}{r} = \frac{GMm}{r^2}$$

we would have come closer to the 18,000 miles per hour actually required. Try it and see for yourself.—LT H. W. Kellar, USNR.

• *Why don't you two fellows fight it out with abaci at πr^2 paces? We'll hold your slide rules for you.—Ed.*

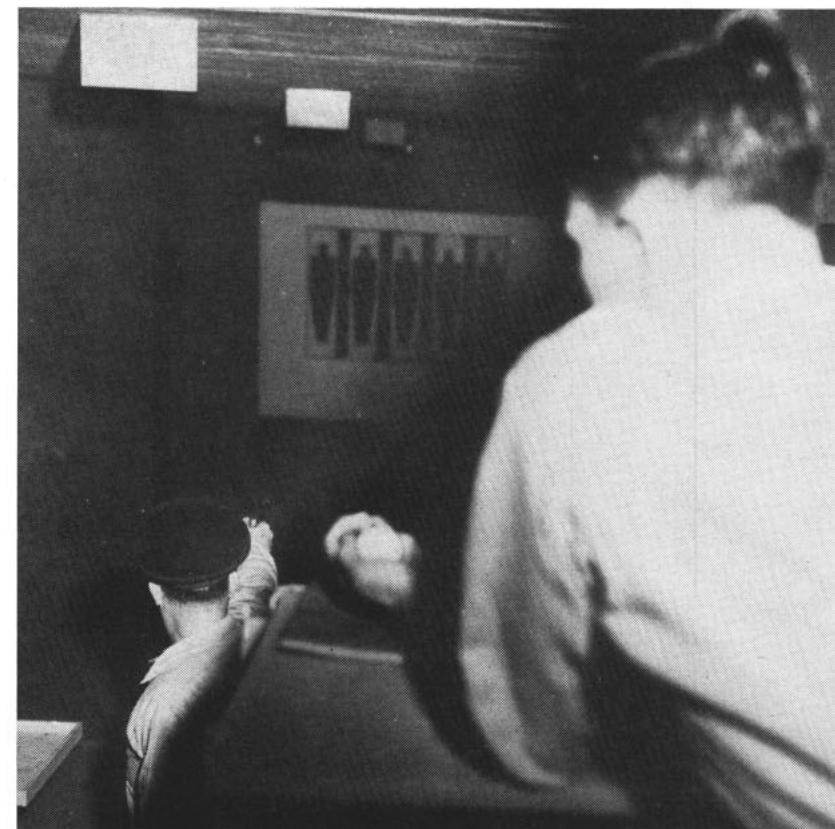
Satellite Equation

SIR: In the December 1957 issue of ALL HANDS, your equation on satellites in Taffrail Talk (p. 64) literally cried for a solution so we have tried to see what we could do with it.

While it took a bit of shuffling around and looking up various weight and distance conversions, we eventually arrived at what we conclude to be the right answer—that is, to the equation you presented.

We do, however, find it a bit difficult to believe that an earth satellite can successfully orbit the earth at a distance of -3059.000029499 miles from the surface of the earth; i.e., approximately .00007050 miles, or 11.36 centimeters above earth's center.

We believe that at least one part of the given parts is in error and that is where you say "G" equals the gravi-



SHOOTING THE WORKS — Chiefs C. L. Frazier, AOC, USN, and F. B. Vocke, ADC, USN, (shown below) practice firing on the reduced scale rapid fire pistol range at Naval Air Test Center Rifle and Pistol Club, Patuxent River, Md. The two were responsible for the design and construction of the range.



tational constant which is given as 6.67×10^{-8} . We aren't experts in matters of this sort so we can't be sure that, assuming the equation is correct, any of the given values are right.

All this leaves us at loose ends, so we hope you can clear up the matter.—E. L. Henning, ET3; D. J. Humphries, ET3, *uss Steinaker* (DDR 863).

• *Science certainly can do wonderful things, can't it?*

However, on the assumption that you may have buried your satellite so deeply because of a misplaced decimal point or so, we are forwarding your comments to the lads who passed the equation on to us. We'll let you know how we make out.—Ed.



TERRIER TWINS — Double-barreled trouble for enemy planes rest in the launchers bearing Terrier surface to air guided missiles now with the Fleet.

Questions on Seavey

SIR: I would appreciate comments on the following situation as it applies to me under the Seavey program:

I reported to sea duty on 28 Sep 1956 and on 15 Jun 1957 rotation data cards were received by my rating segment. I did not receive a card since my sea duty had not been completed. Cards for my segment will again be issued in June 1958, three months after the completion of my sea duty. Three months later the Bureau will start issuing orders. Allowing for three months advance notice, it would be a total of nine months after completion of my current tour of sea duty before I could expect to start ashore.

Or, upon completion of the prescribed 18 month sea duty required for my rate, the rotation data card will be sent to my commanding officer, returned and within three months I could expect advance orders, providing of course there is a billet available, there is no operational data entered on my card, and I have the required obligated service.

The Seavey instruction may state in black and white which of these cases

is the correct one, but I don't seem to interpret it correctly.—R. H. B., AKC, USN.

• *Let's get one point straight. There is no longer a specific sea tour as such. It will vary from year to year, according to the needs of the service. The number of eligible people placed on Seavey will equal the number required to fill the shore duty requirements during the next year and this number will vary. There is no use placing names*

Annual Review of Service Record

SIR: Many thanks for the explanation of the *Manual of Navy Enlisted Classifications* (NavPers 15105A) which you ran in the February issue of ALL HANDS. However, I believe that there is one error in the article where it is mentioned that the service record should be "revised" annually on 1 September, etc. I believe the word should be "reviewed." Am I correct?—E.R.K., YNC, USN.

• *Uh huh, yup, you're right, Chief. And thanks.—ED.*

on the list in excess of the expected vacancies.

Under the Seavey the Navy has developed a plan 18 months into the future. If you have the obligated service and are on the Seavey you know the 12-month period when you will go ashore. You will receive advanced planning information three to four months before transfer as to which district you will be ordered to.

The cut-off month and year for each rate means all who have been on sea duty from that date or earlier are on the Seavey. They will go during the following 12-month period, but the exact month depends on the vacancies occurring in the area of their preference and their priority.

As you can see from this explanation, the first case you stated would be the correct one. You first must meet the cut-off date requirement for your rate. In the following June (or some other month depending upon which segment you are in) a rotation data card will be forwarded to you and during the next year you can expect to receive your advance orders to shore duty.

This flexibility is necessary to place the maximum number of personnel ashore in the areas of their preference, but it is based on the law of "supply and demand."

One of the conditions of the old shore duty system that Seavey avoids, is the possibility of being bumped down the waiting list. Selection from the shore duty eligibility list was a day-to-day operation. One day you could be first, but on the next you might be No. 50 because 49 people of your rate who had been perfectly happy at sea for long periods of time decided to marry, met a girl, or for some other reason submitted their request and you were bumped. Many people waited a considerable period of time on this list for vacancies ashore because there was no definite plan.

Seavey gives you a plan and once you meet the requirements you know that you will receive your orders ashore during the next 12-month period after you receive your data card.—ED.

Senior Diver in Charge

SIR: I have a question that has been argued many times. Among a group of divers, who should be senior diver in charge?—H.M., Jr., ME1, USN.

• *There should be no argument. In general, the diver who holds the most qualifications for Master Diver, in accordance with Article C-7408, "BuPers Manual," would normally be in charge. But, in all cases, the designation of Senior Diver in Charge rests solely with the commanding officer who, in making his selection, considers diving experience and general leadership abilities of the various diving petty officers.—ED.*

Allowance on Bonus?

SIR: I have been receiving contradictory answers to my question regarding reenlistment allowances and bonuses. I reenlisted from a warrant status in January 1947 for six years, completed that tour 22 Jan 1953, reenlisted for six additional years and elected to receive the reenlistment allowance. My current enlistment expires 22 Jan 1959. Can I elect to receive the reenlistment allowance for the years 1953-1959 in lieu of the reenlistment bonus?—A.J.H., HMC, USN.

• Since you elected to receive a reenlistment allowance in 1953 under section 207 of the Career Compensation Act of 1949, as amended, you must receive a reenlistment bonus under either Section 207 or Section 208 of the Act at the time of reenlistment in 1959. You may not again elect to receive a reenlistment allowance incident to any reenlistment after your reenlistment of 22 Jan 1953.—Ed.

Dungaree Rating Badge

SIR: The dungaree rating badge was, no doubt, designed for maximum convenience. But to my way of thinking, it doesn't seem to be working out.

After several washings, the adhesive fails. The solution to this is to sew it on but this detracts from the convenience factor. The adhesive soaks through the rating badge and discolors



WHO SAYS 13 IS UNLUCKY?—If there was superstition among the crew members of USS Bausell (DD 845), it didn't stop their earning 13 'E' awards.

it. The new badge placed on an older dungaree shirt does not match in color.

Here is my suggestion: authorize the rating badge to be stenciled on by the individual; this stencil (or template) to be carried in Clothing and Small Stores.—L. G. Fordyce, EN1, USN.

• Your criticism of the iron-on rating badge is valid. The stenciling process was considered by the Uniform Board

but rejected in favor of the iron-on badge because the shortcomings of the adhesive-backed material did not show up in the Fleet trial that was conducted.

Your suggestion of stenciling the rating badge on the dungaree shirt has merit. How about submitting the recommendation via the appropriate commands to the Chief of Naval Personnel (Attn: Pers Ba)?—Ed.

Ship Reunions

News of reunions of ships and organizations will be carried in this column from time to time. In planning a reunion, best results will be obtained by notifying The Editor, ALL HANDS Magazine, Room 1809, Bureau of Naval Personnel, Navy Department, Washington 25, D. C., four or more months in advance.

• USS Ancon (AGC 4)—The eleventh reunion for World War II crew members will be held on 30-31 May at the Sylvania Hotel, Philadelphia, Pa. For further information, write to Henry R. Spaventa, 6376 Martins Mill Rd., Philadelphia 11, Pa.

• Commanding Officers, Destroyer Escorts, WW II—The ninth annual DE Skippers' reunion will be held at the New York Yacht Club on 24 April. For more details, write to H. V. Richard, 50 Broadway, New York 4, N. Y.

• Eighth Beach Battalion—The third reunion will be held on Labor Day weekend (29 August thru 1 September), in Montreat, N. C. Details are available from Clifford L. Legerton, 263 King St., Charleston, S. C.

• USS Idaho (BB 42)—A reunion will be held in Norfolk, Va., on 24-25 May. For further information, write to David C. Graham, SMC, USN, 614A Chester St., Norfolk 3, Va.

• Naval Indoctrination School, Quonset Point, R. I.—A reunion is scheduled for 21 March at the Drake Hotel, Chicago, Ill. Information is available from the Quonset Reunion Committee, 700 North Michigan Ave., Chicago 11, Ill.

• USS Oklahoma (BB 37)—A reunion for World War I crew members will be held at the Hotel Piccadilly, New York City, on 3 and 4 May. For additional information, write to Edward H. Lutz, 673 Lindley Rd., Glenside, Pa.

• USS Warren (APA 53)—The fifth annual reunion is scheduled for 9, 10 and 11 May at the President Hotel, Atlantic City, N. J. Details are available from Allie Frank, P.O. Box 247, South Orange, N. J.

• USS Yorktown (CV 10)—The 11th annual reunion will be held at the Hotel Roosevelt in New York City on 2 and 4 May. For further information, write to James T. Bryan, Jr., 67 Wall St., New York, N. Y.

• USS Abercrombie (DE 343)—Former crew members who served on board during World War II and who are interested in a reunion, with time and place to be decided, may write to Raymond J. Shiel, 26 Whipple Ave., Cranston 9, R. I.

• NAS Gainesville, Ga.—Personnel

who served at NAS Gainesville and who are interested in holding a reunion in August may write to Edward T. Beazley, 636 West Ridgewood, Gainesville, Ga.

• USS Saint Paul (CA 73)—Crew members who served from 1945 to 1949 and who are interested in holding an east coast reunion in September may write to LCDR Robert E. Tyler, USN, 1708 West 48th St., Norfolk 8, Va.

• USS Sanctuary (AH 17)—All former crew members interested in holding a reunion in the fall of 1958 may write to Donald R. Player, P.O. Box 393, La Grange, Ga.

• 11th and 12th Beach Battalions—Former members who are interested in holding a reunion in the summer of 1958 may write to CAPT George C. Griffin, USNR, (Ret.), Georgia Tech, Atlanta, Ga.

• 91st Seabees—A reunion is planned for late March or early April. For further information, write to Frank Carragher, 85 West Hill Rd., Colonia, N. J.

• All former crew members of the battleship Texas are invited to attend a reunion 21 April on board the battleship Texas, which is berthed at the San Jacinto Battleground near Houston.

Some Comments on the Mystery of the Disappearance of Conestoga

SIR: I had frequently heard my father tell about *uss Cyclops* and I was quite interested in the story of her disappearance in the August 1957 issue of *ALL HANDS*, and in the further letter by Earl E. Sutton in the November issue.

Chief Sutton also mentioned an "Indian-type tug" which disappeared while towing two 500-ton lighters. I believe this to be *uss Conestoga* (AT 54) and, if memory serves me right, she was lost in 1923. Do you know anything about her?—D. L. Thompson, MSCT, USAF.

SIR: The tug referred to by Chief Sutton was *uss Conestoga* (AT 54). After her disappearance a small boat, Navy, with a black letter, "C" on it, was found. Naturally, this boat was thought to be connected with *Conestoga*, but I have heard that the Bureau plate, giving the serial number and other data, did not gibe with the records on the issue to her.

What the ultimate findings were, concerning this bit of evidence, I don't know, but I do know that I lost a mighty fine shipmate in *Conestoga*—a Chief Boatswain's Mate by the name of Zimmerman. Later, hearing from other tugboat men about the difficulties involved in tows at sea, it's not hard to conjecture what might have happened. In those coaling ship days, the 500-ton barges were large, unwieldy pieces of hamper.

Some of us oldsters like to reminisce about the Navy, way back when, so keep up the work on the old packets. The old yarns can be pretty interesting, but they used to seem more impressive when the teller had the square knot on his sleeve that meant he had served his time as "Apprentice," at nine dollars a month and had enlisted when he was 14 years old.—John J. Wagner, SKGC, USN (Ret), Norfolk, Va.

SIR: I was on board *uss Rainbow* (AS-7) at Pearl Harbor when the call went out for all available ships to put to sea in search of *uss Conestoga*. I believe she's the Indian-type tug referred to in your November issue.—Charles J. O'Connell, Brooklyn, N. Y.

SIR: Earl E. Sutton, who referred to an Indian-type tug in your November

issue, was a BM2 on board either *uss Thrush* or *Gannet* when *Conestoga* disappeared. I know because I was in the same ship with him, and our assignment at the time was the search off the west coast of Mexico. She must be the tug he wrote about.—Robert R. Lawler, LTJG, USN (Ret), Woodland Hills, Calif.

SIR: I believe Chief Sutton is referring to *uss Conestoga*, which disappeared in the Pacific in the early 1920s.—C. H. Lyman, RADM, USN.

SIR: The "Indian-type tug" was *uss Conestoga*, which disappeared in the early '20s. I was in *uss Newport News* returning from the Orient at the time. Several of the men on board lost shipmates in that sinking.

Incidentally, I also knew a lot of the *uss Cyclops* gang, who were lost with that ship in 1918.—C. E. Reynolds, CRM, USN (Ret) (1911-1946)—now Chief of Police of Clarinda, Iowa.

SIR: "The Indian-type tug" was *uss Conestoga*.—J. L. Nimmo, CHBOSN, USN (Ret), Miami, Fla.

SIR: *uss Conestoga* was the "Indian-type tug" Chief Sutton referred to.—John M. Piecuch, CMM, USN (Ret.), Agawam, Mass.

SIR: Mystery, profound and complete, which surrounds the disappearance of ships at sea, continues to capture the imagination and interest of mortal man—hence, my contribution to Letters to the Editor.

The tug Chief Sutton mentioned was *uss Conestoga*, a fleet tug of 617 tons displacement, commanded by Lieutenant E. L. Jones. She had 56 officers and enlisted men on board when she left Mare Island Navy Yard on 25 Mar 1921 for Pearl Harbor, en route to Samoa, with a tow. She never reached Hawaii.

I believe she was named after a tribe of Indians that once lived in Lancaster County, Pa. Indian names for Navy tugs were common following the turn of the century—thus, *uss Sioux* (ATF 75), *Uncas* (YT 110), *Ontario* (ATO 13), *Choctaw* (ATF 70), *Mohawk* (YTL 17) and many other brawny midgets of yesteryear.—Robert R. Myers, EMC, USN (Ret), Long Beach, Calif.

SIR: I am pretty sure that the "Indian-type tug" was *uss Conestoga* and I am positive she was lost in 1921.

I remember the year because during most of it I was on recruiting duty on the Upper Peninsula of Michigan, and it was while I was there that *Conestoga* disappeared. A local boy was one of

her crew.—C. V. Williams, CGM, USN (Ret.).

SIR: I have the answer for you. The name of that tug was *uss Conestoga*.—Osmond McFarlane.

SIR: I think the seagoing tug Chief Sutton had in mind was *uss Conestoga*.—S. V. Boggs, ADC, USN.

SIR: The query in the November *ALL HANDS*, concerning a missing "Indian-type tug" refers to *uss Conestoga*, which sailed from San Francisco on 23 Mar 1921 and was never heard from again.

For what interest it may contain, here is a list of all the Navy's "missing" ships since 1775. It is extracted from the "Ship Losses" section of the *Navy Almanac*, which lists over 850 ships lost due to all causes between 1775 and 1955.

9 Oct 1780—*uss Saratoga*, 18 guns, headed for Delaware Capes while being chased by British *Intrepid* and was never seen again.

8 Aug 1800—*uss Insurgent*, 36 guns, sailed from Norfolk, Va., for the West Indies with a crew of 340 and was never seen again.

20 Aug 1800—*uss Pickering*, 14 guns, sailed from New Castle, Del., for Guadalupe with a crew of 90—never seen again.

20 Jun 1805—*Gunboat No. 7* sailed from New York, N. Y., bound for the Mediterranean—disappeared.

9 Oct 1814—On this date a boarding party from *uss Wasp* spoke the Swedish brig, *Adonis*. Some time after that *Wasp* and her crew of 140 vanished at sea.

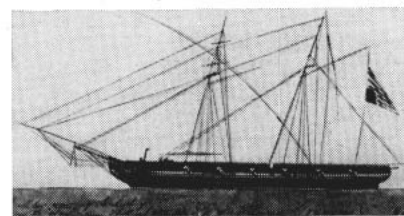
14 Jul 1815—On this date *uss Epervier*, a brig, en route from Tripoli to the United States with dispatches from Commodore Decatur, passed Gibraltar bound westward. She was never seen again.

28 Oct 1824—*uss Wild Cat*, with a crew of 14, sailed from Thompson's Island in the West Indies, destination Cuba—disappeared.

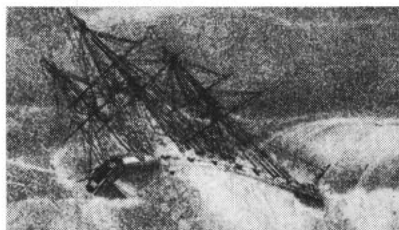
10 Sep 1829—*uss Hornet*, 18 guns, crew of 140, was driven from her anchorage at Tampico, Mex., by a heavy gale. No trace was ever found.

— 1831—*uss Sylph*, 1 gun, sailed (evidently from New Orleans en route to the West Indies) and was

USS Grampus, lost March 1843



USS Hornet, lost September 1829



and Other Navy Ships

never seen again. Navy records give no crew list nor date.

25 Feb 1839—uss *Seagull*, a tender with the Wilkes South Sea expedition, sailed from Orange Harbor in Tierra del Fuego with a crew of 16 and wasn't heard from again.

14 Mar 1843—uss *Grampus*, believed lost in a heavy gale, was last seen on this date off Charleston, S. C.

21 Sep 1854—uss *Porpoise* was last seen on this date by uss *Vincennes* in the Strait of Formosa.

29 Sep 1854—uss *Albany*, with a crew of 193, sailed from Aspinwall, Nicaragua (now Colon, C. Z.) headed for New York and disappeared.

18 Sep 1860—uss *Levant* sailed from Hilo, Sandwich Isles, for Aspinwall, and was never seen again. This was the ship in which Philip Nolan—the fictional "Man Without a Country"—was supposed to have died.

15 Mar 1910—uss *Nina*, a tug, sailed from Norfolk and was never heard from again.

4 Mar 1918—uss *Cyclops* sailed from Barbados, B. W. I., bound for Baltimore, Md. No trace of the ship or her 309 passengers and crew members was ever found.

26 Sep 1918—uscs *Tampa* disappeared in Bristol Channel with her crew of 118. She is believed to have been sunk by the German U-53, but this has never been verified.

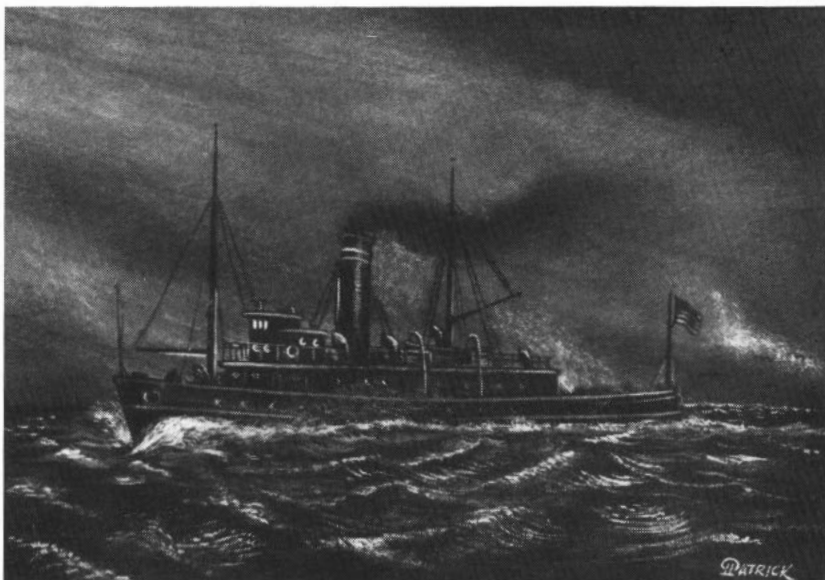
23 Mar 1921—uss *Conestoga* sailed from San Francisco (Mare Island) and was never heard from again.

Incidentally, this will be your last official communication from me as Head of ChInfo's Research Section. However, I'm not disappearing without trace—I've just finished 26 and am retiring. —Arnold S. Lott, LCDR, USN.

• Thank you, one and all, especially you, LCDR Lott. Your list should save us a lot of searching the next time we get a letter about a lost ship. This time, though, we really stirred up something.

We had just barely gotten our own copy of the November issue when the letters began to come in. Oddly enough, the first came from Master Sergeant Thompson of the Air Force. Next, we heard from Lieutenant L. M. Wahr-mund, USN, of the Enlisted Detailing Section (a few offices away), who corrected Thompson's date from 1923 to 1921. After that the dam broke and the flood of letters from the old timers hit us.

However, once we had *Conestoga's* name, the rest was easy—for us. We just turned the problem over to our good friends in Ship's Histories Branch, Naval History Division, and began treading water until they furnished the



MYSTERY TUG—Artist's conception (made from contemporary tugs) shows how USS *Conestoga* (AT 54) might have looked before she disappeared in 1921.

details. Here's what they came up with. Or, if you don't like sentences that end with prepositions—Here's the information up with which they came.

Conestoga—over-all length 170 feet; beam, 29 feet; mean draft, 16 feet; trial speed, 13 knots, and tonnage, 617 gross, 420 net—was built for commercial use in 1904 at Sparrows Point, Md. The Navy bought her on 14 Sep 1917 and armed her with one three-inch 50 cal. gun and two machine guns. Her complement was set at three officers and 35 enlisted men.

For the remainder of World War I, *Conestoga* was assigned to the Submarine Force, performing towing duties along the Atlantic Coast, transporting supplies and guns, escorting convoys from the United States to Bermuda and the Azores and cruising in the Azores area with the American Patrol Detachment.

After the war *Conestoga* was attached to Naval Base 13, Azores, where she towed disabled ships and escorted convoys until September 1919. Following that, she was assigned to harbor tug duty in the Fifth Naval District.

In 1920 *Conestoga* received the seemingly routine orders that were soon to make her a mystery ship. Assigned duty as station ship at Tutuila, Samoa,

she underwent alterations and fitting out at Norfolk, Va., then departed Hampton Roads on 18 November, bound for the Pacific, via Guantanamo Bay and Panama. On 7 Jan 1921 she reached San Diego, Calif., and on 17 Feb she proceeded to Mare Island Navy Yard—her last port of call on a voyage into nothingness. Her next stop, en route to Samoa, was to have been Pearl Harbor, but she was never heard from again after she left Mare Island on 25 Mar 1921.

Despite a search by all available ships and planes which covered a period of several months, only one possible trace of *Conestoga* and her four officers and 52 enlisted men was discovered. A lifeboat with the letter C on the bow was located by ss *Senator* in latitude 18° 15' N., longitude 115° 42' W., on 17 May 1921. The letter was removed from the boat by the crew of the merchant vessel, who then destroyed the boat. The letter was subsequently sent to the Navy Department.

It is more than likely that the lifeboat belonged to *Conestoga*, but this couldn't be proved conclusively because of the destruction of the boat. No survivors and no other wreckage were found, although the ocean and all the islands in the vicinity—the *Islas de Revillagigedo*, south of Baja California—were thoroughly searched.

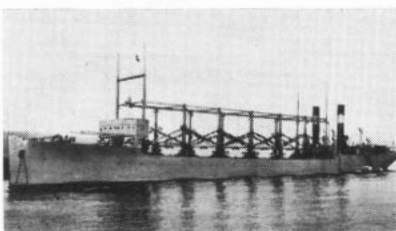
Conestoga, together with her crew was declared lost as of 20 June 1921.

Along with *Saratoga*, *Insurgent*, *Pickering*, *Wasp*, *Epervier*, *Levant* and all the others mentioned in LCDR Lott's letter, she has joined the mystery fleet.

Did she capsize? Did one of her tows spring a leak and drag her under?

You figure it out—if you can.—Ed.

USS *Cyclops*, lost March 1918





GOING UP — Photograph of huge wave was taken in North Atlantic during gale in 1945 from bridge of USS Thornhill (DE 195) 40 feet above water line.

Stormy Weather

SIR: Your interesting article on hurricanes and the photos of heavy weather at sea in the November issue reminded me of the enclosed picture. This was not taken in a hurricane, but in a North Atlantic gale in February 1945. The wind was from the northwest, blowing out of a clear sky. I believe the wave shown was the highest I have ever seen. I took the photo with a box camera from the flying bridge of the USS Thornhill (DE 195) which was in the trough of the sea at the time. Since the flying bridge was 40 feet above

the water line, the top of the enormous crest, which blocks off the horizon, must have been even higher.

DEs are noted for their seaworthiness and we rose to this wave like a duck with plenty of heavy spray coming over the flying bridge. We fell into the next trough with a shudder as if we had struck a reef. After several days of this the forward bottom plates were dished in and had to be straightened during our next yard period.—H. H. Leich, LCDR, USNR.

• *The North Atlantic has always been known to seagoing men as a*

vicious mistress which can spawn some of the worst storms possible. In many ways they are as deadly as the hurricanes of southern latitudes. We appreciate your thoughtfulness in sending the picture of the giant wave.

However, a note of caution to all contributors. Pictures of heavy seas should be covered and labeled "Danger, Heavy Weather Photo." Two of our staff are recovering from a North Atlantic gale. One suffered the usual "mal de mer" when he ventured to sea on a destroyer while the other admits to a certain uncomfortable feeling experienced in a submarine rolling up to 50 degrees. Pictures of this type still have a certain disturbing effect on them.—Ed.

Sea Duty for Regulars, Reserves

SIR: I am a Naval Reservist currently serving on two years of active duty. When I began this tour I was told that Reservists on a two-year tour of active duty would serve 12 months at sea and then 12 months ashore. I was immediately sent to sea and have since been looking for an instruction or notice pertaining to this so-called 12-month sea/shore program for Reserves.

I would appreciate if you would let me know if there is any such instruction and if so, what's the scoop?—W.D.S., SN, USNR.

• *Sorry, but you have had the course. By now, you should have your sea legs and be a veteran of many mail buoy watches. If not, be assured, you still have many months at sea ahead of you.*

BuPers Inst. 1306.21C which concerns sea/shore rotation of enlisted personnel, applies to Reservists as well as to Regular Navy personnel on active duty. Happy Sailing!—Ed.

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ALL ASHORE—USS *Evans* (DE 1023) rests at anchor in Acapulco's harbor.

Anchoring at Acapulco

IT'S A FORTUNATE CREW that can boast of a famous vacation resort as the destination for their ship's first cruise.

This was the good luck of the Navymen on board *uss Evans* (DE 1023) who spent a week at the luxurious beach of Acapulco while taking their San Diego-based ship on her shakedown cruise.

On liberty most of the Navymen made their first stop at the bank's money exchange counter to change their dollars into pesos. Then they went out to see what this tropical city had to offer.

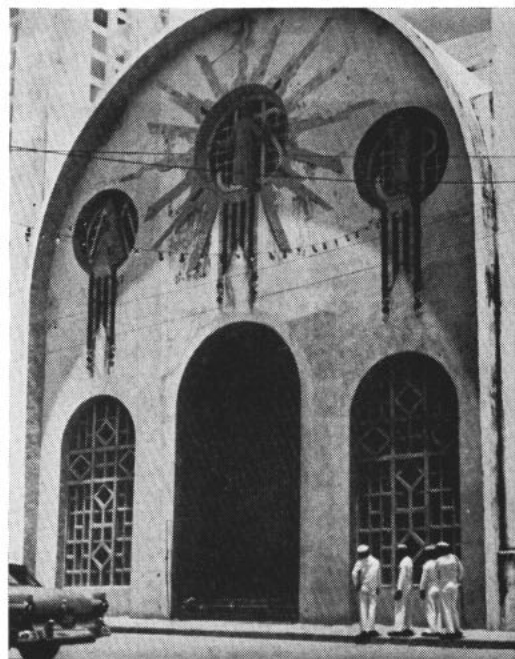
Some went to the beaches, while others wandered in and out of the many little shops. Those who visited the town during the mid-afternoon found it nearly deserted. Acapulco was in the midst of its daily siesta. During this three-hour period all

stores close and all activities cease. The destroyermen found this a good way to beat the heat as they joined the townspeople in the shady parks or one of the cafes that stayed open. At four p.m. the town springs back to life with the shops staying open until eight.

Activities enjoyed by the relaxing Navymen included day and night swimming, fishing with boats for hire coming right to the ship, glass-bottom boat rides and skin diving.

While the men of *Evans* were ashore enjoying the Mexican hospitality, the ship lowered her gangplank and invited the people of Acapulco to an open house.

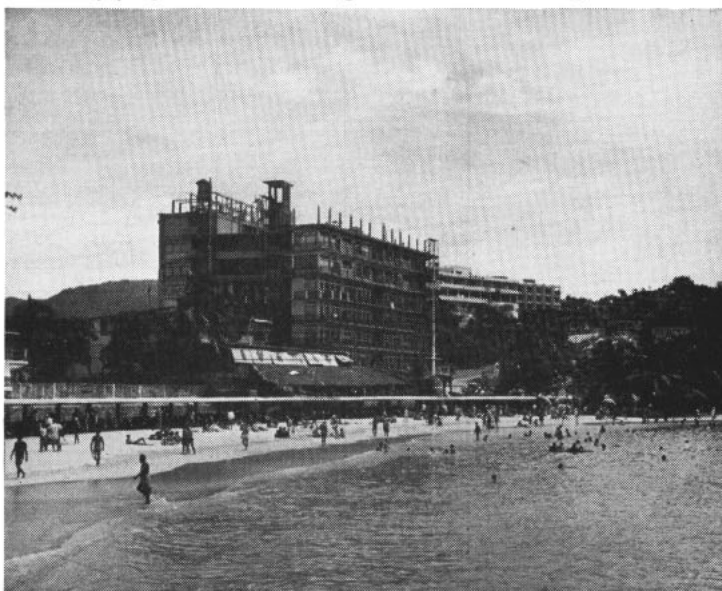
When it came time to set to sea again it was the conclusion of an activity-loaded week in one of the world's famous vacation spots with round trip fare paid by the Navy.



IN TOWN—Destroyermen enjoy visit to Acapulco church (above) and tour through city's streets and many shops.



SHADY RETREAT—*Evans* sailors relax in shade during siesta time enjoying view overlooking Caleta beach at right.



★ ★ ★ ★ TODAY'S NAVY ★ ★ ★ ★



TO THE RESCUE—USS *Chanticleer* (ASR 7) stands by to aid submarines in distress. Emblem aft of the hull number is indicative of Submarine Rescue Vessels.

Target Now Talks Back

An electronics device that tells antiaircraft gunners how close their missiles come to the target has been perfected by the Naval Ordnance Laboratory, Silver Springs, Md.

The "miss-distance indicator" indicates the distance in feet by which the missile failed to hit the target aircraft. The system can be applied equally well to rockets, supersonic missiles or conventional artillery shells. The MDI consists of three very high frequency radio units: a tiny transmitter in the missile, a receiver-recorder on board the missile-launching ship and a so-called "transponder," or relay station, inside the target itself.

When the missile is fired, its transmitter signals both the transponder in the target and the receiver on the ship. At the same time the trans-

ponder retransmits to the receiver, on a different wave length, the signal coming in to it from the missile.

The receiver compares the signal from the transponder with the signal coming direct from the missile. The difference between these two signals is recorded by a tracing that shows the distance between missile and target at the point of closest approach. Also shown is the relative speed between missile and target.

The MDI is not intended for combat use. (Enemy aircraft would hardly oblige missile-launching crews by mounting a transponder.) As a training device for gun and missile crews, however, it is expected to be an invaluable aid in improving their aim.

The MDI is now being packaged into a relatively lightweight portable kit for early use by naval units.

First-Line Jet Fighter

The Fleet can hope to see the new F8U-3, the Navy's advanced all-weather jet fighter, some time in 1960. A contract amounting to approximately \$100,000,000 has been awarded for its production.

Engineered to operate at altitudes which a few years ago represented record heights, the new job will have radar and fire control installations which incorporate a number of the most advanced electrical devices being developed. Although its speed is in the range usually associated with purely experimental rocket aircraft, requiring long runways on which to land, the new plane will be able to land on less than 300 feet of aircraft carrier deck.

Designed to be a first-line fighter in a new generation of all-weather Navy aircraft, the interceptor can be launched from a carrier by catapult in a matter of minutes. Its armament will include some of the Navy's newest air-to-air guided missiles.

The new fighter incorporates some of the features of the 1000-mph-plus *Crusader*, now flying with Fleet squadrons on both coasts, but it is of completely re-engineered design.

The *Crusader* won for the Navy its first Thompson Trophy by setting a national speed record of 1015 miles per hour in 1956.

Fighter Flies 1000 MPH, Plus

The Navy's first 1000-mile-an-hour-plus fighter—the F8U1 *Crusader*—is now serving at sea on deployed carriers of both the Atlantic and Pacific Fleets.

The Atlantic Fleet was first to get an operational *Crusader* squadron—VF-32 from Cecil Field, Fla. The same squadron was also the first to receive the Navy's fastest fighter plane. That was back in March 1957.

For the Pacific Fleet the first operational squadron to give the *Crusader* a workout at sea was VF-154 from Moffett Field, Calif.

Both squadrons were deployed aboard carriers for regular Fleet service after the first of the year.

YESTERDAY'S NAVY



On 3 Mar 1837 Congress approved first naval drydocks, one to be constructed at Norfolk, other at Boston. USS *Constellation* left N. Y. with a cargo of food for famine victims in Ireland, 30 Mar 1880. Congressional authorization of four steel ships on 3 Mar 1883 was major step toward development of a modern U. S. Navy. ONI was established by SecNav 23 Mar 1882. On 30-31 Mar 1944 carrier-based planes in Palau area destroyed 18 ships (tankers, cargo ships and tenders), five subchasers and patrol craft and damaged 13 other ships.

Getting Rid of the Boom is Disposaleers' Business

In most lines of work, people are pretty pleased when business is booming. But such is definitely not the case for the five men on the Navy's Explosive Ordnance Disposal Team at Yokosuka, Japan.

They earn their hazardous duty pay by getting rid of old Japanese depth charges, mines, bombs and other types of ordnance ranging from 25mm shells to large bombs which failed to go off when they were used in World War II. Most of this work is performed in the waters of Tokyo Bay or at Far East naval installations where left-over ordnance is discovered.

The officer-in-charge of the team is LTJG Theron R. Van Sickler, USNR, who gives the impression that he isn't very concerned with the risks of his occupation. Actually, though, Mr. Van Sickler, has a healthy regard for the ordnance and its murderous potential. He's not the daredevil type, nor are any of the other men on the team.

The requirements for getting on the team are tough for most men to meet. "First of all," says Mr. Van Sickler, "the men must be interested and they must be volunteers. Then they must be stable and reliable. We work so close together that we have to trust the others on the team as much as we trust ourselves. Of course, the men must have above-average intelligence—since every situation they meet is different—and they must," concluded the expert "be in excellent physical condition."



CHIEF CHECKS out oxygen gear worn by the five-man team during operations to bring up munitions.

TEAM WORK — Navymen of Explosive Ordnance Disposal Team bring up 'souvenir' from bay's bottom.

There is always a possibility that corrosion of safety features, or sudden changes of pressure, will cause an item of ordnance to explode.

About a year ago the team received a report of a depth bomb beneath the Yokosuka Harbormaster's pier. The EOD men investigated and found not one, but 11 bombs, each containing just about 350 pounds of explosives.

Last September the team was called to an old firing range at Yokosuka, where Seabees were clearing ground for a parking lot. They dislodged a live, six-inch shell with their bulldozer. Somehow, it didn't explode, even though the 'dozer hit it hard enough to leave marks on the blade.

After checking around with an electric detector, they found more buried ordnance—25mm and three-inch shells—all live, so they immediately restricted the area.

"Ordnance around that old range has been a nuisance for many years," commented LTJG Van Sickler "Somebody living nearby used a mortar shell as a door-stop. And, after a rain, 25mm shells are often uncovered along the beach."

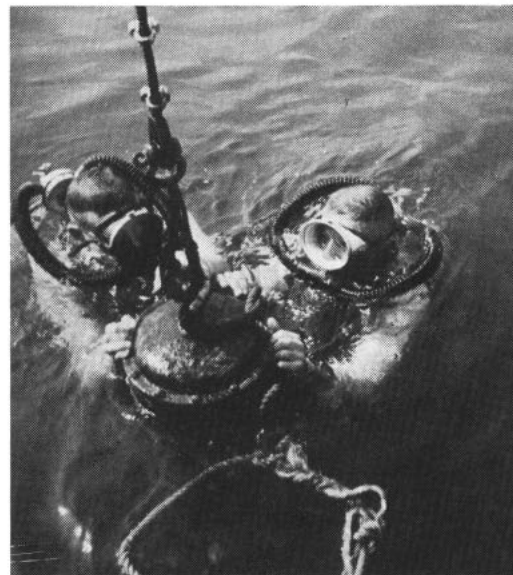
On land the team locates ordnance with electronic detectors similar to the mine detectors used in World War II, or they find it through the reports of people who happen to spot it.

In the water they use special gear—somewhat like the surface mine detector—which gives out high-frequency sounds when metal is contacted. They then inspect their find to determine what precautions to take in recovering it, work out plans for handling it and then proceed with the disposal.

Besides these detectors, their water equipment consists mainly of a landing craft which has a winch line aft for loading ordnance on board, and assorted types of diving suits and underwater lungs. They are assisted by a floating crane when they come across bombs too heavy for their craft.

Usually, they unload the recovered ordnance far out at sea.

—Eugene Ormsby, JO3, USN



Deep Boat: The Bathyscaphe

Probing down to nearly two miles beneath the surface of the Mediterranean, Navy scientists have completed a series of 26 dives in the Piccard bathyscaphe, *Trieste*, off the coast of Naples in a research program sponsored by the Office of Naval Research.

The bathyscaphe, the creation of Professor Auguste Piccard, is the underwater equivalent of a lighter-than-air craft such as a blimp. It consists of a 50-foot hull, 12 feet in diameter, filled with gasoline to make it buoyant, since gasoline is lighter than water. Beneath this hull is suspended a sphere, 6.5 feet in diameter, constructed of forged "fatigueless" steel. This sphere, which easily holds two men and scientific equipment, is capable of withstanding ocean depths of more than three miles, which is about 20 times as deep as a conventional submarine. This permits the craft to explore about 99 per cent of sea floors in the oceans of the world.

The hull above the sphere is built to withstand the buffeting of surface waves and towing but is not designed to resist deep sea pressure. The craft descends by letting sea water into air chambers in the hull. Entering through holes in the bottom, the sea water, which does not mix with and is heavier than gasoline, maintains an even pressure between the hull and the outside sea. The normal rate of descent is about three knots. Ascent is made by jettisoning iron shot used as ballast. Additional control of the buoyancy is achieved by valving off small portions of gasoline. Some horizontal maneuverability of the bathyscaphe is provided by two battery-powered reversible propellers

mounted on the hull.

The cabin has two portholes with windows made of six-inch thick Plexiglass. Three mercury vapor lamps attached to the sphere are used to light up the ocean depths. *Trieste* is the second bathyscaphe designed by and built by Professor Piccard. The first one, known as the FNRS3, is owned and operated by the French Navy. The name bathyscaphe is combined of two Greek words, "bathy" and "scaphe," meaning "deep boat."

The Office of Naval Research engaged *Trieste* for a broad research program, involving acoustical and biological investigations of ocean depths. The long-range objectives of this program are to explore the ocean environment at great depths and to evaluate the potentialities of the bathyscaphe both as a research tool and as a naval craft, such as a submarine rescue vessel or a deep diving submarine.

In this particular series of dives the emphasis was on the study of the field of sound in the ocean growing out of the Navy's great interest in underwater acoustics in submarine warfare. Investigations of the biology, geology and physics of the ocean depths also were conducted in an attempt to identify sources of ocean sounds, and to determine the sound transmission qualities of the ocean and the bottom.

One puzzling discovery was that at mid-depths the noise level differed significantly from that at higher and lower depths. It also appeared that this noise came from a horizontal rather than a vertical direction.

In addition to acoustical measurements, there were many observations

made of life in the mid-depths and on the bottom. An abundance of life was noted at all depths, including such strange species as fish whose bodies appeared to be covered with white down.

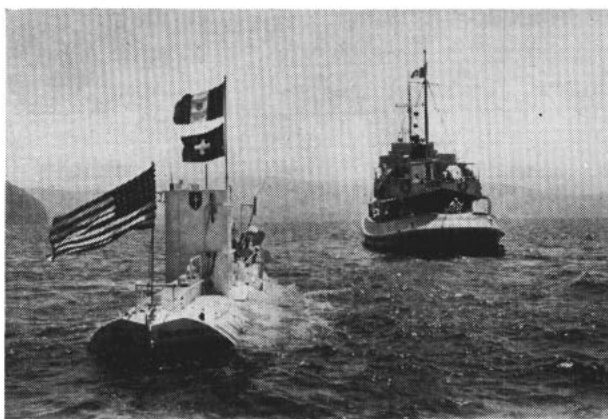
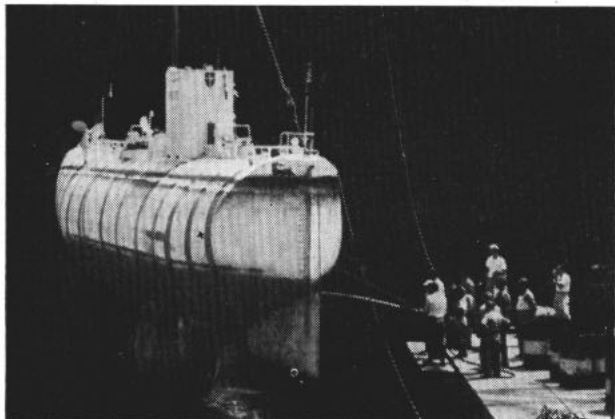
Keeping Tabs on Ocean Waves

The Naval Postgraduate School, Monterey, Calif., now has an instrument for measuring waves (ocean waves that is) as they arrive on the West Coast. It will be used by aerology students learning the techniques through which surf conditions were predicted for the amphibious invasions of WW II.

Called a Shore Wave Recorder, Mark IX, Mod. 5, the instrument is an ingenious device that senses the waves passing overhead but filters out the tides and other slow sea-level changes.

The pressure head of the instrument, placed near the ocean bottom 3000 feet offshore, is able to detect waves passing overhead because water pressure beneath the surface is high when the waves are high and low when the waves are low. Thus, water pressure at the instrument oscillates continually as the successive crests and troughs of individual waves go by above.

Mounted on a five-foot tripod to keep it from being covered by drifting sand, the pressure head consists of a brass cylinder about four inches in diameter and a foot long. In it, pressure variations caused by waves activate an oil-filled rubber bellows. This, in turn, activates a second bellows with a movable arm, which is inside another chamber. The arm sweeps back and forth across an electrical coil to produce varying electrical impulses. These are trans-



BOTTOM BOUND—Bathyscaphe being used by NRL in Med can reach bottom two miles down. Note sphere in photo.

From Seaman To Quartermaster To Warrant Bos'n To Cdr—in 42 Years

The giant British liner *Lusitania* settled into the Atlantic, sunk by a U-boat. Jess Willard lifted the heavyweight crown from the head of Jack Johnson. A young pitcher by the name of Babe Ruth was beginning to make a name for himself with the Boston Red Sox. Woodrow Wilson was in the White House. And, dollar bills were larger both in size and purchasing power.

These were the news stories that were making headlines in 1915, when Clarence Lucius Foushee—despite an admonition that he didn't have what it took to stick it out—joined the Navy as a seaman third class.

Since then—42 years—two World Wars have gone by, and the man who “didn't have what it took” is still around. Now as CDR Foushee, he is CO of *uss Luzon* (ARG 2), a ship where the work is never-ending and morale is sky-high.

During his first enlistment, which began 15 Jul 1915, Seaman Foushee worked his way all the way up through the quartermaster rating, rising to chief quartermaster before the end of his first four years. On this hitch he set his sights on two goals which he was later to attain and pass. The first was to be promoted to warrant officer and the second, to spend 30 years in the Navy.

During the early part of his second enlistment CDR Foushee was stationed on board the destroyer tender *uss Prairie*, when she assisted in the famous 1919 flight of the NCs from Trepassey Bay, Newfoundland, to England via the Azores and Portugal.

On 9 Aug 1924, with his commissioning as warrant boatswain,



FORTY-TWO YEAR Navyman, CDR C. L. Foushee, USN, shows his starting pay of \$17.60 as enlisted man in 1915, to J. Sexton, FN, of ship's crew.

CDR Foushee reached the first of his goals. He surpassed it when he was promoted to chief boatswain in August 1930 and to ensign in November 1941. Shortly after he became an ensign he was ordered to sea as CO of *uss Sagamore* (AT 20), and in that capacity he took part in the salvaging of *uss Wakefield* (AP 21), which had burned 700 miles at sea. This was during the darkest days of World War II, when German submarines threatened to take over the Atlantic Ocean.

When the fleet tug *uss Tawakoni* (ATF 114) was commissioned on 15 Sep 1944 the then LCDR Foushee took command of the brand new ship, and after brief sea trials, steamed for Hawaii and then on to the Marianas.

From there *Tawakoni* headed for what turned out to be one of

the bloodiest battles of World War II—Iwo Jima. With no navigational aids, the ship fought against reefs and shoals, as well as the enemy, throughout the 28-day battle. Most of the time, while helping disabled landing craft off the beaches and sending divers to other ships to clear propellers that were fouled with lines, she worked within machine-gun range of the enemy.

Before World War II was over the commander attained his second goal—30 years in the Navy—but he decided to stick around. He was close to his 35th year of naval service when the Korean war began, and during that war he was Executive Officer of *uss Frontier* (AD 25).

Now, as he nears completion of his 43rd year in the Navy, he's proved pretty conclusively that he “had what it took to stick it out.”

mitted to shore, where a continuous ink trace of the waves is made automatically.

Since wave conditions are determined by the weather, the job of forecasting them is primarily a meteorological one. If adequate daily weather maps of the ocean are available, it is possible to forecast the waves arriving at any location in the open ocean or on any coast as much as five days in advance of their arrival. The technique for doing this

was first developed during World War II when the need to know surf conditions on enemy beaches became vital. It was devised for the Navy by Drs. H. V. Sverdrup and W. H. Munk at Scripps Institution.

The first amphibious landing for which wave forecasts were provided in World War II was the one at Casablanca, North Africa. In the Pacific, wave information was first provided for the assault on Pelelieu, Palau Islands, where the forecasts

were made by ENS W. C. Thompson, now Professor of Oceanography and Aerology at the Postgraduate School.

The school is the only one in the country which offers a regularly given laboratory course in practical wave forecasting. With the wave recorder, students in that course will be able to check the accuracy of their forecasts, and both students and faculty members will be able to use the instrument in research work.

Atlantic Fleet Roundup

HOW ARE WE DOING? From where most of us sit, it's pretty hard to get an over-all picture of the Navy's operations—what it has accomplished during the past year and what it hopes to do in the future.

The complete picture would more than fill this issue of ALL HANDS, but here's a situation report of the Atlantic Fleet, in the words of CinCLanFlt ADM Jerauld Wright, USN. As a trend-indicator, it sounds good to us.

During 1957 the U. S. Atlantic Fleet reached its highest state of

ability to meet the varying demands of the "brushfire" incidents of a cold war.

Antisubmarine Warfare

The Atlantic Fleet's number one problem continues to be antisubmarine warfare. To meet this problem, the Fleet tightened up its antisubmarine defense force by establishing in July an Antisubmarine Command in the Atlantic. The new command coordinates all antisubmarine warfare efforts and has the responsibility in the Atlantic of preventing a successful submarine attack against the continental U. S.

The capability of the Atlantic

elements, carried out training exercises under such varying conditions of climate and terrain as the beaches of the Eastern United States, Panama, Puerto Rico and the coast of Turkey.

The simulated employment of atomic weapons for both offensive and defensive forces was incorporated in the amphibious exercises. Operation Snowball, carried out in northern latitudes, tested aircraft carrier equipment, operations and techniques under conditions of extreme cold.

Aircraft Carriers

The Atlantic Fleet's large attack carriers *uss Forrestal* (CVA 59) and *Saratoga* (CVA 60) participated in a wide range of U. S. and allied naval exercises and proved themselves as hard working ships of carrier striking forces.

In October 1957, *uss Ranger* (CVA 61) joined the Atlantic Fleet, increasing to three the *Forrestal*-class aircraft carriers.

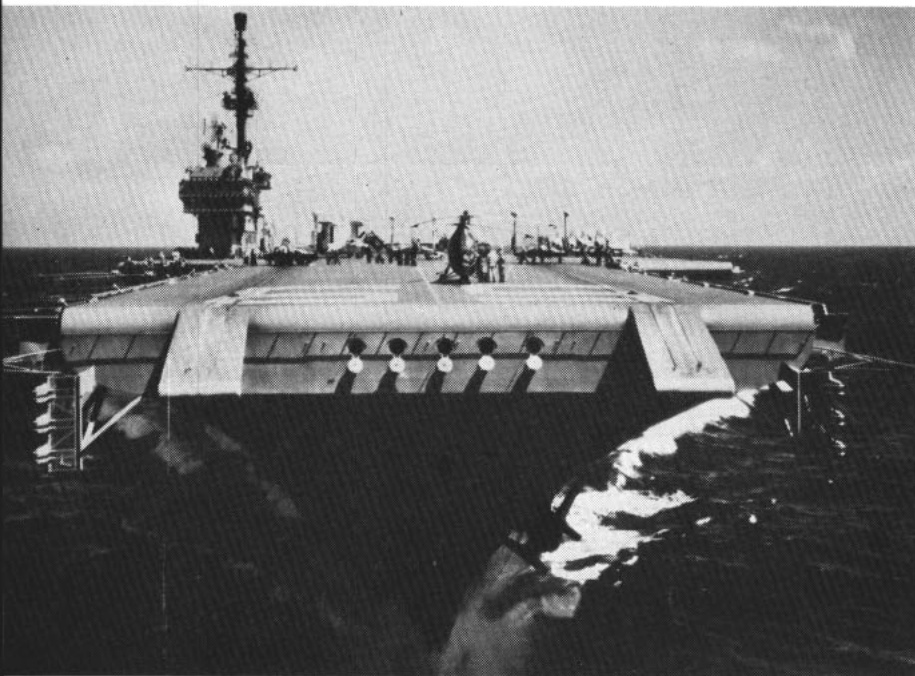
The attack and air defense capabilities of the Atlantic Fleet Naval Air Force were further increased by the addition of two new jet fighters—the F11F *Tigers* and F8U-1 *Crusaders*.

During the year, the interchange of aircraft carriers continued between the Atlantic and Pacific Fleets. *uss Wasp* (CVS 18) returned to the Atlantic Fleet in March and *Essex* (CVA 9) returned in August. In March, *Coral Sea* (CVA 43) left Atlantic waters for a modernization overhaul and *Ticonderoga* left in April for duty with the Pacific Fleet.

Submarines

During 1957, the Atlantic Fleet Submarine Force vastly increased its potentialities in the field of submarine and antisubmarine warfare. This was made possible by intensive testing of the nuclear powered submarines *uss Nautilus* SS(N)571, and *Seawolf* SS(N)575, the guided missile submarine *Barbero* SS(G) 317, and the new streamline-hulled *Albacore* (AGSS 569). In March, *Nautilus* refueled after cruising 60,000 miles on its first small charge of uranium. In May, she was assigned for temporary training duty to the Pacific Fleet.

En route from Panama to San Diego she set a new underwater cruising record—3049 miles without surfacing. In October she traveled within 180 miles of the North Pole during a five-and-one-half-day cruise



ATLANTIC FLEET'S large attack carriers *USS Forrestal* (CVA 59) and *Saratoga* (CVA 60) took part in a wide range of U.S. and allied naval exercises in 1957.

readiness since the end of World War II. New ships, new weapons and new operational techniques generated by the nuclear age have greatly increased the Fleet's capabilities, particularly in the offensive aspects of naval warfare.

Contributing factors include:

- A new family of faster naval aircraft.
- Atomic weapon delivery techniques are now basic training for all Fleet aircraft squadrons except utility and transport squadrons.

- Training at all levels in the employment of guided missiles and nuclear and thermonuclear weapons.

The high state of atomic readiness attained by the Fleet has been accomplished without sacrificing its

Fleet to employ atomic depth charges against enemy submarines has been a tremendous advance in ASW.

Fleet Exercises

A comprehensive program of training exercises, reaching all elements of the Fleet, continued during 1957.

These included participation in such combined operations as the NATO fall exercises in which Fleet units worked with the naval forces of U. S. allies. These operations provided major testing grounds to develop strong points, uncover weaknesses, and to improve plans, procedures and techniques.

Atlantic Fleet Amphibious forces, including Navy and Marine Corps

under the Arctic ice. This is believed to be the farthest north ever reached by any vessel—87 degrees North.

Destroyers

In April, *uss Gyatt* (DDG 1) the world's first guided missile destroyer, joined the Atlantic Fleet Destroyer Force. Converted from a World War II type destroyer, *Gyatt* carries the *Terrier* surface-to-air guided missile for antiaircraft defense. The missile system is compact, has great range and precision, and is capable of self-monitoring. *Gyatt* is the first Navy warship to have a stabilization system added to her hull structure. The system is designed to eliminate much of the rolling that is characteristic of small ships. It consists of two 24-square-foot retractable fins extending outward amidship below the water line.

Although a number of older type destroyers were inactivated during the year, the readiness of the Destroyer Force was maintained by the addition of new ships. These include *uss Manley* (DD 940), *DuPont* (DD 941), *Bigelow* (DD 942), *Blandy* (DD 943), *Van Voorhis* (DE 1028) and *Joseph K. Taussig* (DE 1030).

In commenting on the future, ADM Wright said:

"I look for a continuation of the rate of progress we have made over the past two or three years.

"The atomic submarines, which have been largely experimental in 1957, will become operational in 1958. *Ranger* will join *Forrestal* and *Saratoga* as a combat-ready ship and will greatly enhance the Navy's atomic striking capabilities. Better and more powerful aircraft are being assigned to these carriers. The big-



TIGER RAG — F11F Tigers joined Fleet adding to attack and defense punch of Atlantic Fleet Naval Air Force. Below: *Nautilus*, SS(N) 571, set records.

ger and more powerful *Talos* will supplement *Terrier* as an antiaircraft weapon. In the future, a major consideration in Fleet operational planning will be intermediate range ballistic missiles. These missiles, capable of being launched from both submarines and surface ships, will appreciably increase the Fleet's offensive power and striking range.

"But no matter how modern our ships or weapons may be, they are only as effective as the men who control them. Full credit for the achievements of the Atlantic Fleet during the past year should go to the fine young men who man our ships, submarines and aircraft—to the seamen, petty officers, ensigns and lieutenants, whose loyalty, knowledge and skill are indispensable elements in defense of the U. S."



ATLANTIC FLEET Amphibs held training exercises on many beaches. Rt: Navy men have kept up with the new gear.



'Anytime, Anywhere'

An R6D from Air Transport Squadron 22 based at NAS Norfolk, Va., has completed a six-week flight in the polar area assisting the Navy Electronics Laboratory in a survey of radio "field strength."

The flight covered over 26,000 miles, a distance greater than the circumference of the globe. The flight made stops at Thule Air Force Base, Greenland; Oslo, Norway; London, England; Nome, Alaska; and Seattle, Washington—a true portrayal of the squadron's motto: "Anytime—Anywhere."

Purpose of the flight was to test, measure and obtain information concerning the usefulness and limitations of low-frequency radio signals in the northern and arctic regions. The arctic area presents a curious challenge in many operational and technical fields. The difficulty encountered in obtaining reliable radio transmissions is considered to be one of the most important. Information obtained during the six-week polar flight will be helpful in future predictions of radio reliability from existing low-frequency radio stations.

Low-frequency radio transmissions are of special interest in the arctic regions where reliable long-range operation is required and where higher frequency propagation is unreliable because of polar-magnetic disturbances.

Before making the flight, the pilots of the R6D attended polar navigation classes. The entire crew—consisting of four officers and 10 enlisted men—also underwent cold weather survival training.

Award for Colombian Ship

The U. S. Naval Mission to Colombia has given the Good Neighbor policy a helping hand in what will become an annual gesture of the friendship between our Navy and the Armada de la Republica de Colombia.

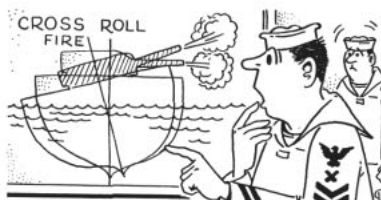
The gesture takes the form of a Smart Ship Award Plaque, to be presented each year to the ship selected as best in the Colombian Navy from the standpoint of gunnery exercises and training, CIC exercises and training, engineering and damage control exercises and training, seamanship exercises and training and administrative and material inspections.

First award of the plaque was made to the patrol frigate ARC

Here's One of the Ways the Gunners of

Here's a story that will bring back nostalgic memories to the oldtimers and a lot of not-so-oldtimers too. It points to one thing—that it takes more than equipment to run a Navy.

NOW, I WASN'T A GUNNER by trade. However, when the gunners needed an extra hand, they used to come down to the



engineroom and get me to help them out. This usually consisted of operating some Rube Goldberg device that one of the bright boys in the Plotting Room had figured out. The time I am telling you about was back in "Thirty-Three."

Somebody on board had heard about cross-roll. Our Main Battery Directors had never heard of it. They only fired when the ship was on an even keel so far as roll was concerned and disregarded any errors which might come from tilting the trunnions due to the ship's pitching. These directors had a little corrector in them to run manually the horizontal wire up and down to halve the roll.

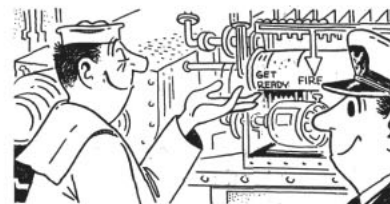
This made it possible to fire always in the middle of the roll. Thus it was possible to introduce roll correction by hand, within limits, simply by keeping the cross-wire on the horizon.

Our battleship had two of these old, old director-rangekeeper combinations, with one sight in the fore top and the other in main top.

Now, it didn't make much difference about cross-roll on a large tub like ours, if you were firing near the beam and firing when the horizontal wire rolls across the horizon. However, that year, when the smart gunnery boys on the ship took one quick look at the new Orders for Gunnery Exercises, they discovered a fluke in the scoring system.

They saw that if we could get the first salvo off exactly at "Commence Firing," make a hit and fire reasonably well from there on, we would have an infinite score for the practice. They also realized that they could not wait for the ship to settle down after the "commence firing" order to do this. Also, they would be firing pretty close to the bow on the approach course to the target. The errors introduced by tilting the trunnions due to the roll of the ship would be appreciable.

To hit the target on the first salvo, these errors would have to



be eliminated or otherwise compensated for. This is where I came in.

We dismantled the course recorder in the chart house and took out the piano roll, that runs the paper along, and mounted it in a wooden butter box contributed by the Supply Officer. Then we manufactured a rack and pinion to hold a pencil. This device was powered

Capitan Tono (PF 12) in ceremonies held at Cartagena, Colombia. The presentation was made by CAPT M. A. Shellabarger, Chief of the U. S. Naval Mission, and among those attending the ceremony were ADM Juan Antonio Pizarro, Head of the Colombian Navy; officers of the U. S. and Chilean Naval Missions to Colombia; and officers and men of all the Colombian ships present. The official Colombian Navy Band was also on hand to

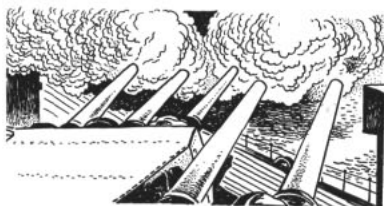
play "Anchors Aweigh" and "Himno a la Armada," the Colombian Navy Hymn.

Capitan Tono, the ship which won the award, is no stranger to ceremonies with an international flavor. She was launched in 1943 as USS *Bisbee* (PF 46) and, during World War II, was transferred to Russia under Lend-Lease. Returned to the United States Navy after the war, she saw action in Korea before she was purchased by Colombia in 1952.

Yesterday's Navy Went about Eliminating the Margin of Error

by a selsyn motor, taken from some unused part of the fire control system. It operated in such a way that, as the paper traveled along and the rack moved back and forth, the pencil would draw a curve.

The whole business was hooked up to the after Main Battery Director. By keeping this director trained 90 degrees to the line of fire and



by keeping the horizontal cross-wire on the horizon, the curve represented cross-roll. Then, one of the smart plotting-room boys figured out a scale that would convert this cross-roll figure into a range and deflection spot.

I was supposed to be the computer. I stood with one hand on the range spot knob, the other on the deflection spot knob, my eyes glued to the pencil on our home-made device and listened for the spot to be called out. When a spot came in, I didn't introduce it, I just remembered it. Then, when the standby signal went, I estimated, by visually extrapolating the curve, where the pencil would be when SALVO was given. I read the scale, corrected the spot which I was carrying in my mind, and cranked the result into the system. This was all done in about one second.

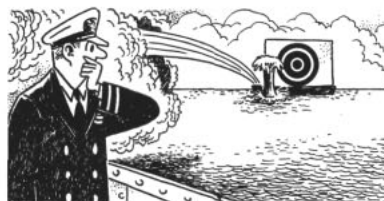
I was never so glad to be rid of a job in my life as I was when that final practice was fired. But—we introduced cross-roll to our fire

control system that had never "heard" of it before.

The big day came.

On the first salvo we came within two yards of the target at 28,000. We didn't get that infinite score for our practice that we were shooting for, but we did receive a score of 789 per cent (The ship argued with the observing party for a full year afterward.)

Now, why am I telling you this story? Why would men spend all of their spare time around the Plotting Room and go crazy trying to make the Fire Control System do something that it was never intended to do? Why would the Fire Control gang pull the whole ship to pieces and hook it up backwards on the outside chance that they could improve the operation of the



system by, what was then considered to be, a marginal amount?

It was simply this, everybody on the ship wanted *his* ship to excel in everything that she did. They would turn handsprings to do it. And everyone, down to the last grease monkey, was down in the mouth when she didn't.

The engineers wanted the gunners to be the best. The gunners, in turn, suffered untold inconvenience so that the engineers could make a good engineering score. This was called *Individual Ship Competition* and we lived with it every day. A lot of people don't

think that it was very good. They say it made thieves out of honest men. They say that it taught bad practices and gave people false impressions of the effectiveness of their equipment. They say lots of things about it. However, there is one thing that cannot be denied. It kept all of us on our toes. We kept our equipment tuned up to



the minute and we ground the last ounce of efficiency out of it.

There are lots of reasons why the old system would not be so effective today. Equipment is more complex. The type of training being used today is more realistic but less adaptable to real individual competition. The Navy's commitments require far more of its ships. There isn't time for effective competition.

But there's a lot to be said for



the motivation and intensity of interest, and the extremes of self-sacrifice that used to be the rule under the old Individual Ship Competition.

—Captain H. B. Lyon, USN.

Softball Field Day

Imagine a thousand men playing tournament softball in one day, coming from a station with only 1050 personnel!

The only persons aboard who miss out on the festivities are those on the binnacle list. And the majority of them watch proceedings from their window grandstands.

This happens three or four times each year at the U. S. Naval Communications Training Center, Im-

perial Beach, Calif.

The idea is the three-year old brain child of the commanding officer, LCDR Robert E. Andreen, USN, and he's never regretted putting it into effect. It is his contention that not only do the participants get a great "charge" from their softball field day, but surveys positively indicate an upgrade in school marks following the day-long tournament.

On the day of the tournament, all the station's divisions and classes

muster at one of the station's five softball fields at 0730.

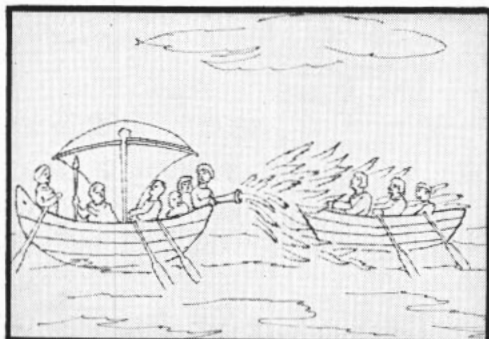
To add interest to the tournament, a class remains out of school only so long as they win.

In order to complete some 40 games in one day, the games are limited to either five innings or 45 minutes of play. The only exception to this is the final game which goes the full route of seven innings.

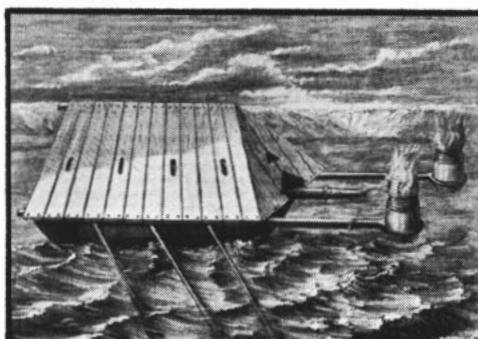
After a day on the field, it's back to the classrooms for all participants.



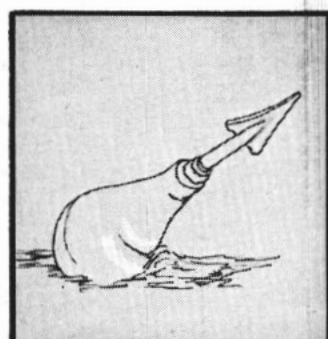
DEVELOPMENT OF FROM GREEK FIRE TO



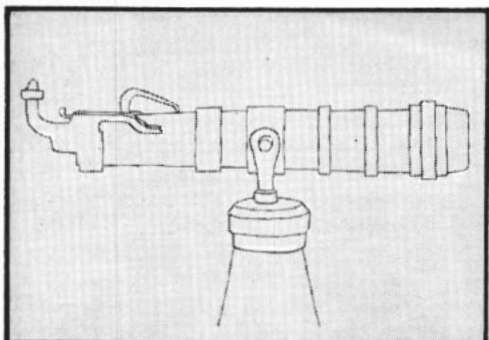
Greek Fire, a semi-liquid mixture, was difficult to extinguish; water only made it more dangerous.



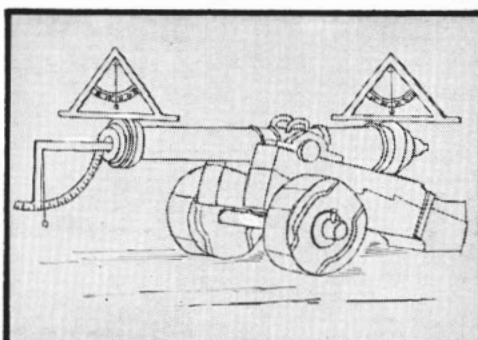
Projecting tubes pumped Greek Fire onto ship's woodwork; also used by covered ram-and-fire ships.



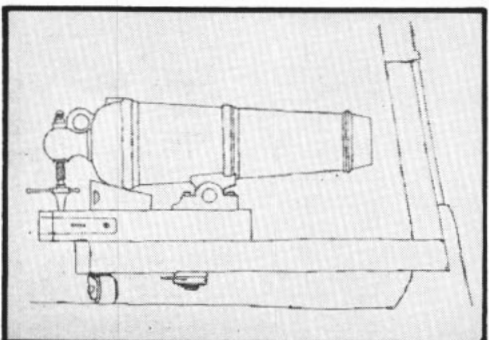
Pot-de-Fer, first metal cannon, fired an arrow instead of ball.



Breech loader used on 16th-century ships made of longitudinal bars held together by shrunk-on hoops.



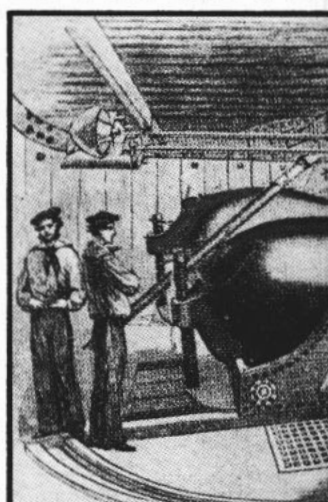
The gunner's quadrant, an early means of aiming a gun on land, was of little use on a rolling ship.



This 1800 carronade, shown on a swivel mount, was used principally to throw heavy shot at close range.



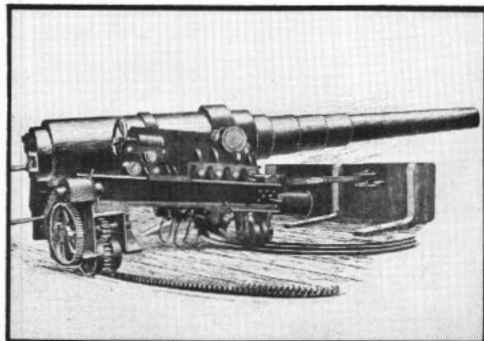
Parrott Rifles gave a good account in the Civil War. They hammered Fort Sumter from two miles away.



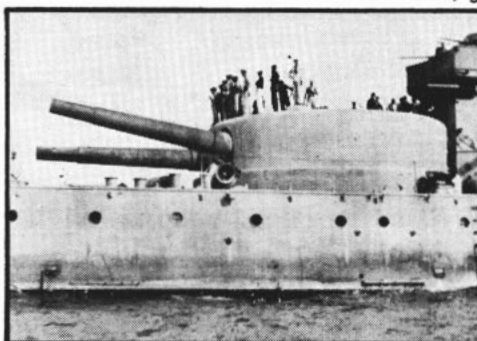
The Monitor's deck-mounted turret rotated by a steam engine, housing



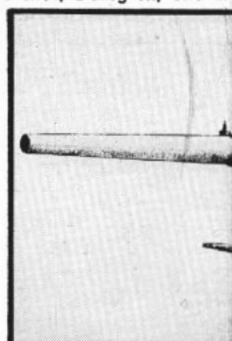
As gunpowder was applied as an instrument in various shapes. A few of the early ones—canisters, can shoes, grape shot, Dahlgren, Shenkle,



About 1880, the Dahlgren smooth bore was retired by modern rifled bore, slotted-screw breech-loaders.



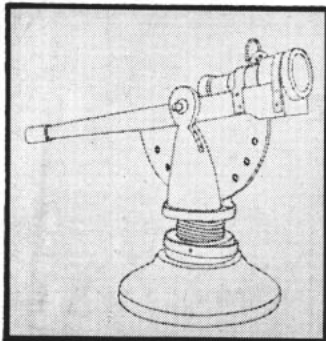
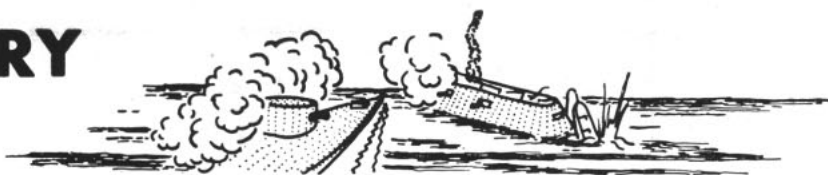
USS Oregon, Spanish American War battleship, mounts two 14-inch 35 caliber breech-loading rifles.



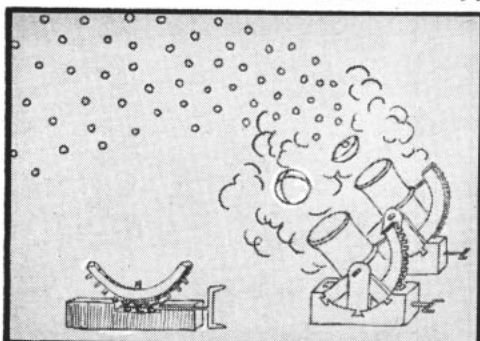
The 3- and 6-pound Hotchkiss rapid-fire, semiautomatic

NAVAL GUNNERY

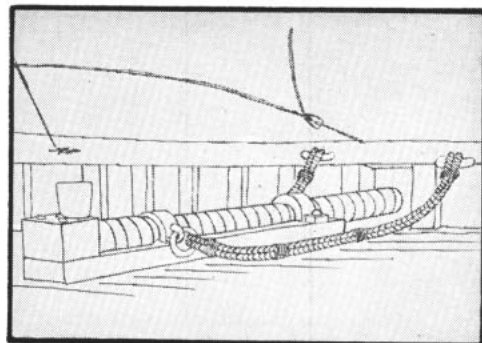
TO GUIDED MISSILES



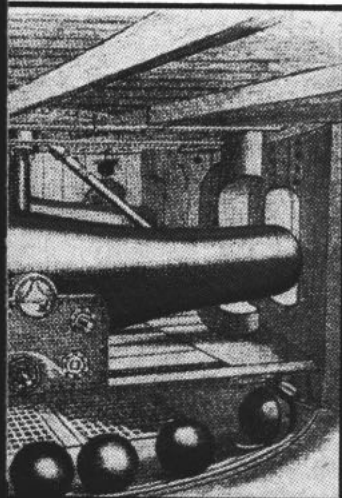
Small 'bombards' used on ships around 1400, fired a stone ball.



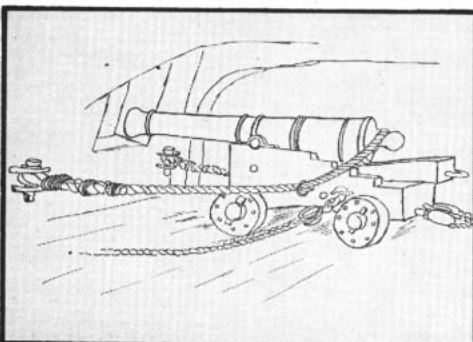
Artillery mortars of the 14th century, from a sketch by Leonardo Da Vinci, showing elevating mechanism.



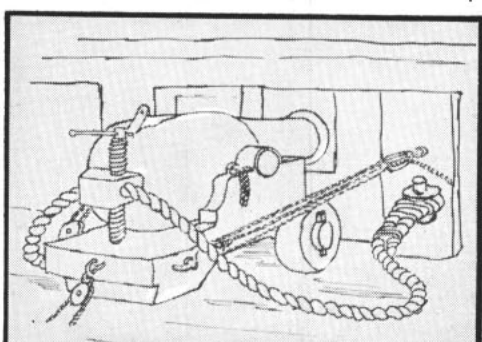
Breech loaders of 1500 were mounted so they would recoil along the deck to relieve strain on the ship.



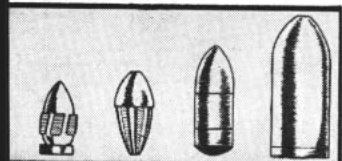
as a cylindrical, flat-topped house, 11-inch Dahlgren muzzle-loaders.



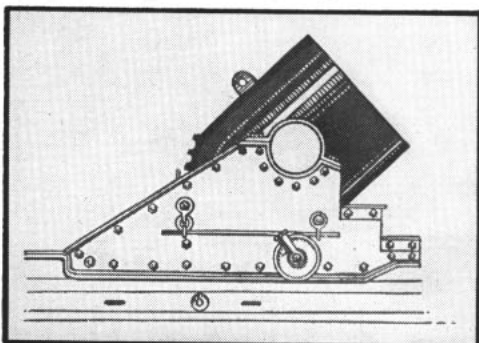
Inefficient breech loaders gave way to the 18th century cast iron, muzzle-loading smooth bores.



Dahlgren's "Soda Bottle" got its name from shape, developed after studies of pressures inside the bore.



ment of war, projectiles took on new on ball, chain shot, shot in wooden Hotchkiss, Parrott 100 - pounder.



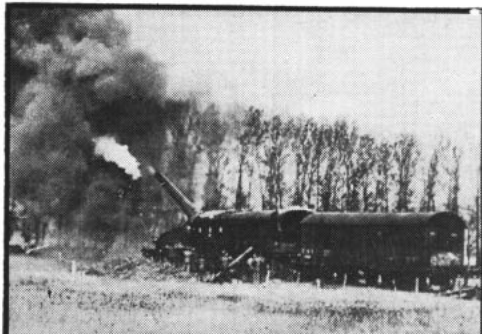
The Rodman 13-inch mortar, used on ships and in coast defense, could fire two and one-half miles.



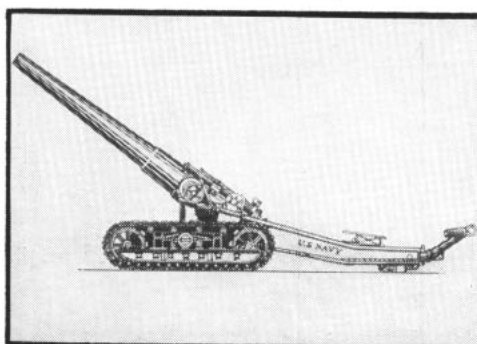
Civil War mortar boats, used in battles on the Mississippi River, carried a single Rodman 13-inch mortar.



Hotchkiss guns of 1895 were using fixed ammunition.



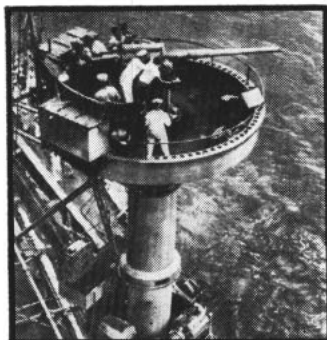
The 14-inch Railway Gun designed by the Navy to provide mobility for long-range bombardment in France.



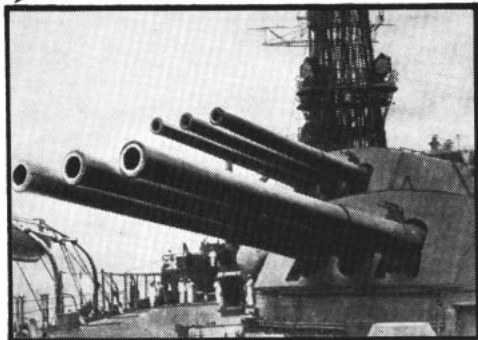
The 7-inch gun on a caterpillar mount, like the railway gun, was designed and built by the Gun Factory.



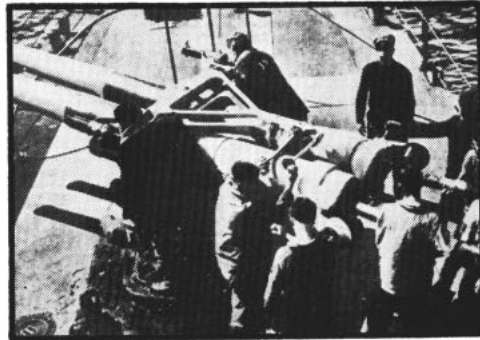
DEVELOPMENT OF



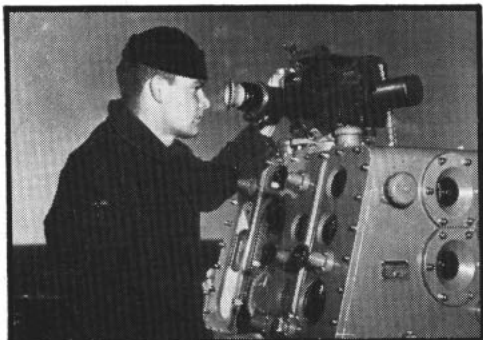
Sky gun mounted above the deck of WW I battleship, *USS Florida*.



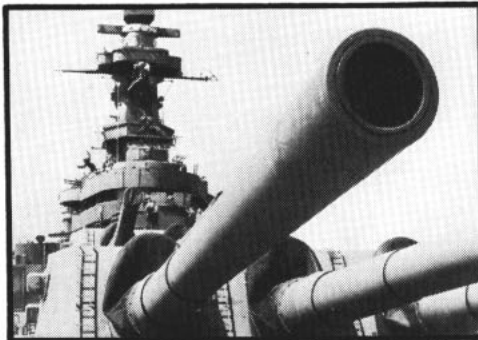
The 14-inch 45 caliber gun was the largest in use until 1918 when the 16-inch 50 caliber rifle was perfected.



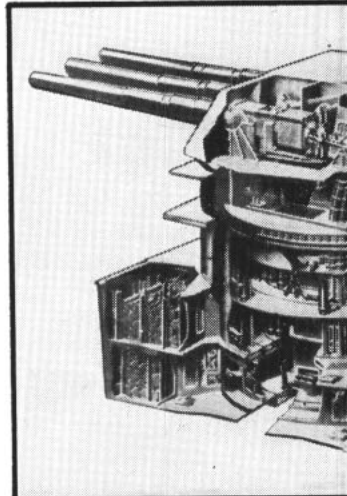
This 4-inch double mount used on destroyers in WW I was soon replaced by larger protected gun mounts.



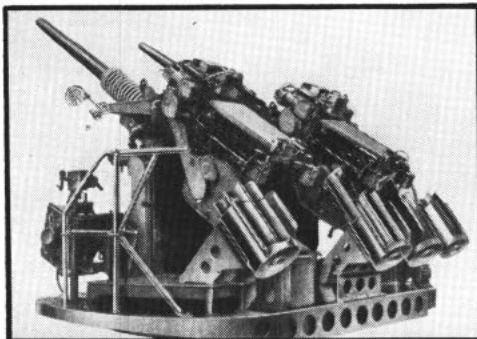
In contrast to the gunners quadrant, the gun director aims big guns on a ship by remote electrical control.



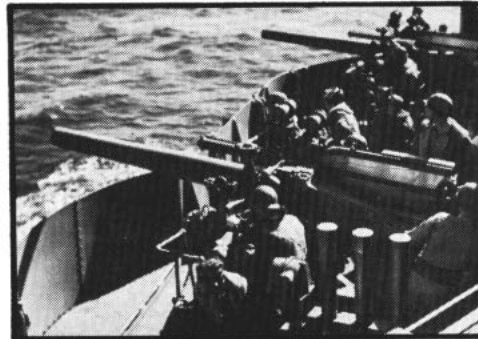
Long-range 16-inch 50 caliber rifles are capable of firing a one-ton projectile more than 19 miles.



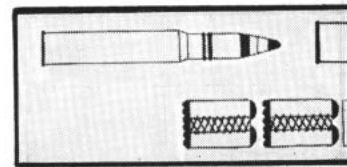
This turret houses three 16-inch 50 armored with plating up to 16 inches lowest armored deck, protecting vital



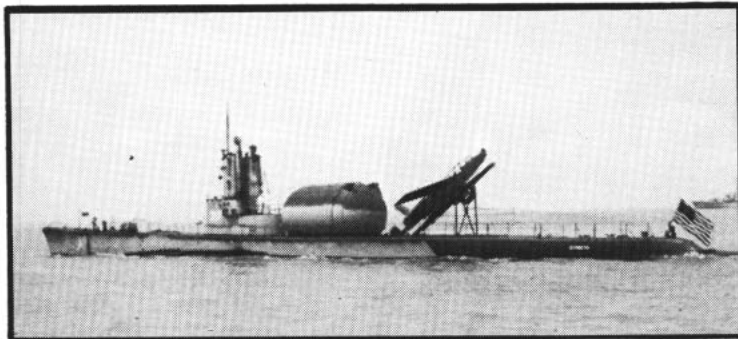
New 3-inch 50 caliber antiaircraft guns on power-driven mounts have electrically driven loaders.



The 5-inch 38 caliber guns, used as primary armament on destroyers, are dual-purpose, surface and aircraft.



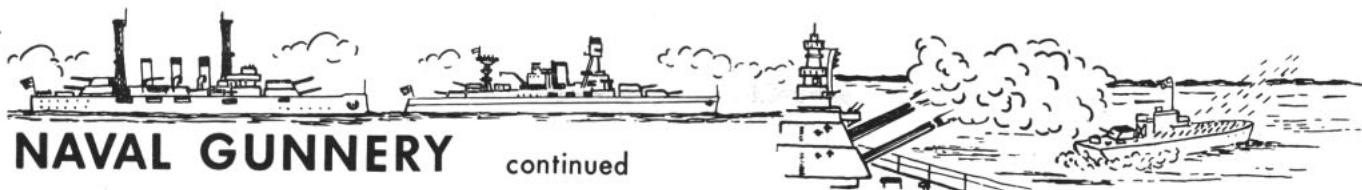
Gun ammunition is classified into three and bag-type. This includes ammunition



Minutes after surfacing, the crew of a submarine can roll out and launch a guided missile and send it roaring toward a target hundreds of miles away.

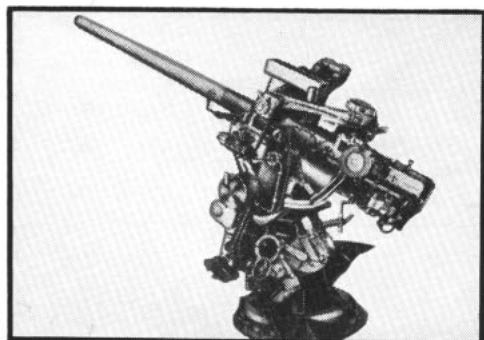


Terrier guided missiles fired from shipboard against enemy aircraft, are now operational on Navy ships.

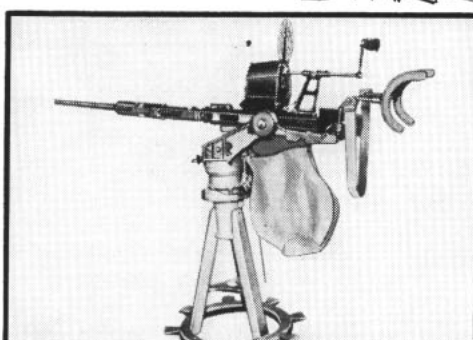


NAVAL GUNNERY

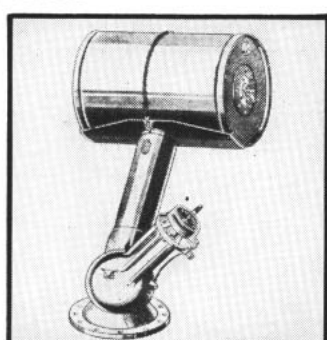
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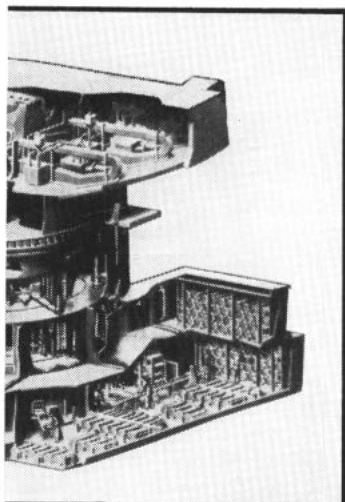
An early version of the 3-inch 50 caliber deck mount had manual control. These guns were used in WW II.



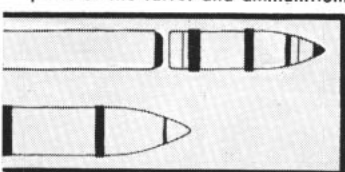
The 20mm anti-aircraft gun, a formidable weapon, was responsible for great loss to enemy during WW II.



The "K" gun, an antisubmarine weapon, fires a depth charge.



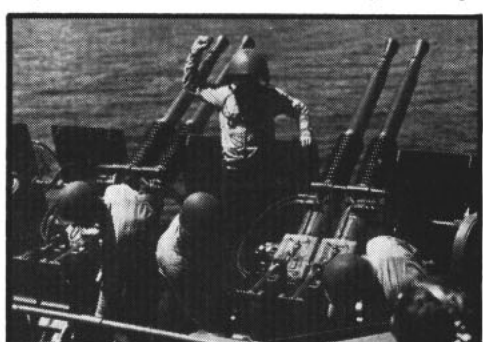
caliber bag-type guns. It is heavily thick. The barrette extends to the parts of the turret and ammunition.



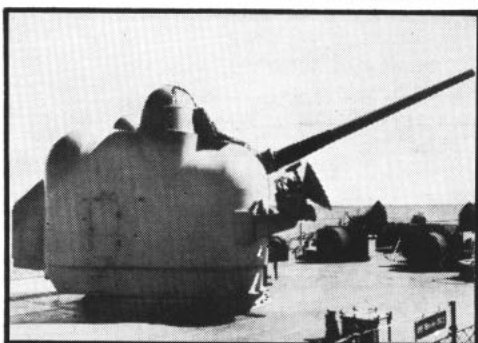
groups, fixed case, semi-fixed case, for guns from 20mm to 16-inch.



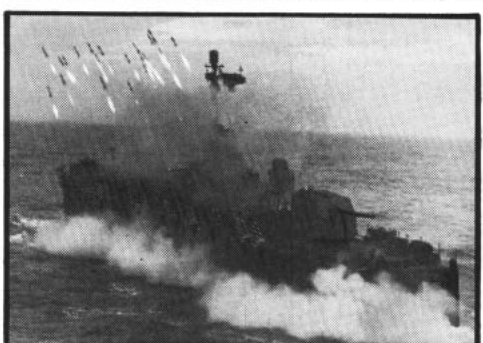
Air-cooled 50 cal. machine guns on motor torpedo boats fire 15 shots per second at attacking planes.



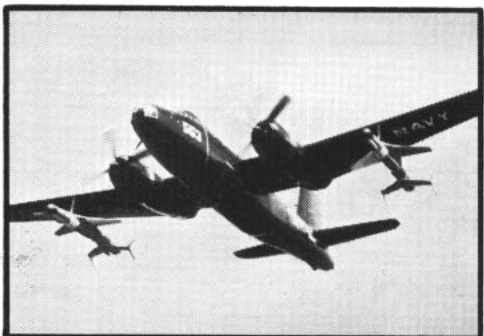
The 40mm gun, the Navy's most important heavy machine gun, is being replaced by larger rapid fire guns.



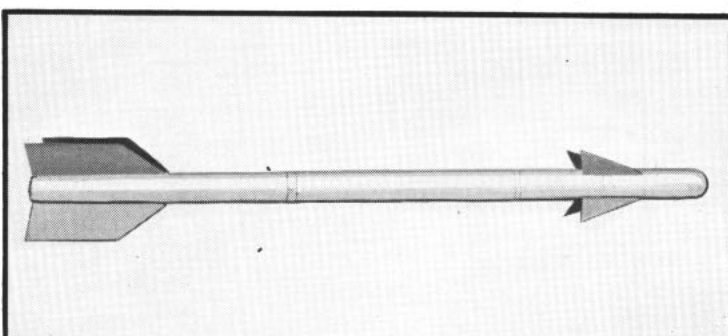
Note the position of the pointer and trainer on top of this new 5-inch 54 caliber streamlined gun mount.



Rocket-launching landing craft played an important part in blanketing enemy defenses during invasions.



Carried by plane, Petrel, air-to-surface guided missiles are designed primarily for use against ships.



Sidewinder, air-to-air guided missile, an inexpensive weapon capable of operating against high performance aircraft, is now in use with the Fleet.

THE WORD

Frank, Authentic Advance Information On Policy—Straight From Headquarters

• **MAY EXAMS**—Eligible Navy-men will find the door open to pay grade E-4 in 24 ratings when the service-wide examinations for advancement in rating are given this May.

These exams will be held on Thursday, 1 May 1958. They are intended for the advancement of both Regulars and Reserves on active duty (excluding TARs) who recently became eligible for PO3, or who missed the February exams. However, in some cases they will also be given for change of rating—in equal pay grade only—where individually authorized by the Chief of Naval Personnel. No waivers will be granted.

Ratings for which the E-4 tests will be given include: AEM, AEI, AG, AQB, AQF, ATR, ATS, ATN, CT, EM, ETN, ETR, ETS, GS GF, IC, OM, RD, RM, SM, TM, SO, UT and QM. Terminal eligibility date is 16 Aug 1958.

The examinations, and procedures to be followed in administering them, were announced in BuPers Notice 1418 of 15 Jan 1958.

• **CORRECT ADDRESS**—As every taxpayer knows—or should know—15 April is the deadline for filing income tax returns. For some Navy-men this will mean a nice, fat refund check and, for others, tax time won't be quite so pleasant.

Either way, it's a good idea to make sure the Internal Revenue Service can get in touch with you without unnecessary delays. Yet, according to the Fleet Post Offices, a lot of mail from IRS to naval personnel is piling up because of insufficient addresses. The most com-

mon error is the lack of ship or unit name.

Since the address on your latest return is the one the income tax people use in sending out refunds or subsequent correspondence, it is important that the address you give on your return is one that will remain correct and valid for a long time. Therefore, in Alnav 3, the Navy is encouraging its personnel to use their permanent home addresses for this type of correspondence.

This is especially true for those Navy-men who expect to be changing ships or stations within the next year.

• **UNIFORM REGS**—Got a question about uniforms?

By now, with 14 recent changes incorporated in the copies of *Uniform Regulations* at your ship or station, you shouldn't have too much trouble finding the answers.

The changes cover the:

Definition of the term, regulation clothing.

Wearing of academic regalia with the naval uniform on occasions of academic ceremony.

Authorization of knee-length socks for wear with white and khaki tropical uniforms (shorts) by officers and CPOs.

Addition of the white scarf to minimum outfit prescribed for officers.

Authorization for wearing of the musician's lyre as a corps device by warrant officer Bandmasters and personnel appointed to commissioned grade for temporary service in the Navy Music Organization.

Abolishment of the dungaree jacket on 1 Jul 1958.

Modification of the tie clasp worn by officers and CPOs.

Authorization of the Service Dress White uniform for Naval Aviation Cadets and Naval Aviation Officer Candidates.

Authorization for the wearing of large medals by enlisted personnel when full dress uniform is required.

Details on specialty marks for the ratings of boilermaker, nuclear weapons man and aircraft carburetor mechanic, and on the distinguishing mark for deep sea diver.

Clarification of the regulations on entitlement to wear gold lace service stripes.

Authorization of the Navy "E" for members of outstanding Naval Reserve Units.

Clarified instructions on the wearing of awards on civilian clothes.

Insignia to be worn by medical, dental and theological students appointed Reserve ensigns under the 1995 designator program.

These revisions are all part of Change No. 4 to *U. S. Navy Uniform Regulations of 1951*.

• **BUPERS MANUAL CHANGES**—Change No. 26 to the *Bureau of Naval Personnel Manual* has something for almost everyone. The 22 changes, additions or deletions, as approved by the Secretary of the Navy, include:

Revised instructions on the substantiation of basic pay.

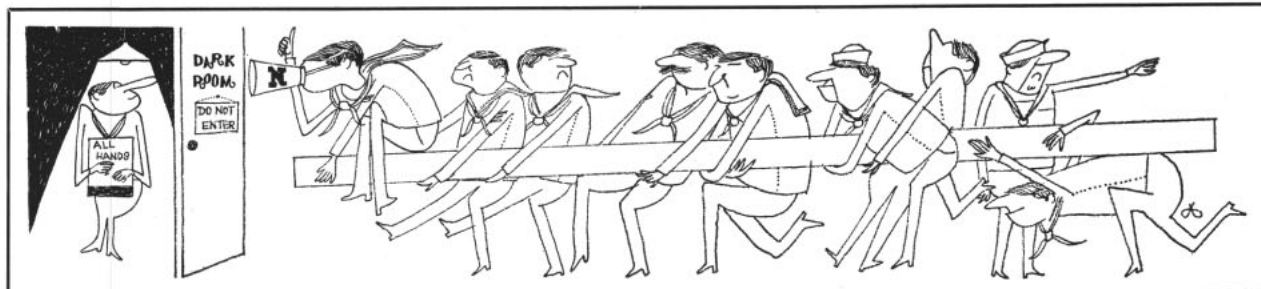
Up-to-date information on entitlement to sea and foreign duty pay.

Instructions for preparing and submitting the Officer History Card (NAVPERS 765) and Officer Preference and History Supplement Card (NAVPERS 765A), which supersede the Officer Data Card (NAVPERS 340).

Instructions for preparing and submitting the Training School Record (NAVPERS 318).

Revised instructions concerning signatures in service records.

Instructions for recording Social Security numbers.



WHO'S IN THE DARK HERE? . . . The nine outsiders will be if you fail to pass on this copy of ALL HANDS.



"Row, row, row 'yer boat gentle down the stream!"

Up-to-date instructions for crediting gratuitous points for Reserve membership.

A list of descriptive grade titles for warrant officers.

Information on policies for granting sick leave to Navymen who are patients in Army and Air Force hospitals.

Amplified instructions for the assignment of enlisted performance evaluations.

Revised regulations covering mustering-out pay.

Up-to-date information on government life insurance.

Information on Social Security benefits.

Instructions on separating individuals with additional obligated service on the grounds of dependency and hardship.

Instructions for notifying the Recruiting Service, district commanders and Chief of Naval Air Reserve Training of the separation of enlisted personnel.

Information on aviation trip insurance.

Information on public liability insurance.

Instructions for the transfer of Reservists with Ready Reserve obligations to the Standby Reserve on the grounds of dependency or hardship.

And four relatively minor pen-and-ink corrections.

• MINNESOTA STATE BONUS —

Certain personnel who resided in the State of Minnesota for at least six months before entering the service, and who served on active duty for at least 30 consecutive days between 27 Jun 1950 and 27 Jul 1953, are eligible for a Korean War Bonus.

Career personnel who were on

continuous active duty for a period of four years or more immediately before 27 Jun 1950, however, are not eligible for the bonus.

Personnel who received the Korean Service Medal will be paid at the rate of \$15 a month for each month of foreign service and \$7.50 for each month of domestic service (duty within the continental U.S.). The maximum amount payable to personnel in this category is \$400.

Those who did not receive or become eligible for the Korean Service Medal will receive \$7.50 a month, regardless of whether their service was foreign or domestic, with the maximum bonus being \$200.

Survivors of those who died while on active duty or following discharge are also eligible for the bonus. The full \$400 is payable to the next-of-kin of those killed in action.

The deadline for filing applications for the bonus is 31 Dec 1958. Applications should be sent to the State of Minnesota, Department of Veterans Affairs, Korean Bonus Division, St. Paul 1, Minn. Payments will be made in Jan 1959.

• **AO EMERGENCY RATINGS DROPPED** — With the disestablishment of the Aviation Ordnanceman U (Utility) and Aviation Ordnanceman T (Turrets) emergency service ratings, the rating of all AOUs and AOTs serving on active duty will be changed to Aviation Ordnanceman (AO).

These changes will be made in equal pay grade, and become effective between 1 Mar and 30 Jun 1958 if you are on active duty. If you're on inactive duty, details will be published later.

Your CO will make sure that you receive the proper Enlisted Classification Code if your rating is changed.

• PRESIDENT'S SAFETY AWARD—

The Department of the Navy was presented the President's Safety Award for having the most outstanding record of performance and accomplishments in safety during the year 1956.

The Navy won the award in competition with all government agencies having over 50,000 employees.

Secretary of the Navy Thomas S. Gates received the President's Safety Award during a White House ceremony. Upon receiving it, he relayed congratulations to all hands.

QUIZ AWEIGH

Since ordnance is featured this month, let's take a quick check and see if you can find the target and fire away for a 4.0.

1. The largest gun you'll find aboard a Navy ship in operation today is (a) 16-inch/50 caliber (b) eight-inch/55 cal. (c) six-inch/47 cal.



2. These guns can be found in the main battery aboard a (a) light cruiser (b) heavy cruiser (c) battleship.

3. Many of the Navy's big guns are being replaced by guided missiles. Today, more than 15 ships are capable of firing this one. It's (a) Tartar (b) Regulus I (c) Polaris.



4. This missile is about to be supplanted by a newer version. It will have a range of about (a) 500 miles (b) 1000 miles (c) 1500 miles.

5. Here's an F9F-8 Cougar armed with one of the Navy's most deadly air-to-air missiles. Only nine feet long and weighing about 155 pounds, it is named (a) Sparrow (b) Sidewinder (c) Zuni.



6. This missile, conceived and developed at the Naval Ordnance Test Station at China Lake, Calif., "homes" on its target by (a) sound (b) heat (c) light.

These are but a few weapons of Today's Navy. If you could not distinguish your A's and C's from the B's in this month's quiz, check the answers on page 40 to get your target bearing.

THE BULLETIN BOARD

Changeover to Streamlined Rating Structure Gets Underway

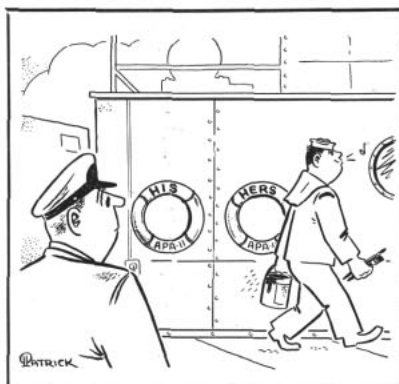
THE NAVY IS STREAMLINING its enlisted rating structure in a major "conversion job" which will eventually affect training programs and qualifications for advancement in about two-thirds of the present General Service Ratings. Over-all plans for a gradual changeover to the new rating structure have already been approved by the Secretary of the Navy, and so have the first of a considerable number of changes in individual ratings.

Behind these changes, the first of which will probably begin to go into effect some time after 1 March, are such factors as the increasing complexity of weapons and equipment, the large number of Reserves and one-enlistment personnel on active duty, and the need for a Navy rating structure which can switch from a peacetime to a wartime footing at a moment's notice.

In effect, the new rating structure will be a combination of the pre-World War II and the post-World War II rating structure systems. As the old timers will recall, the Navy had only about 32 ratings before the war. These were the same for both Regulars and Reserves, and at all petty officer levels the training emphasis was on generalization and broad qualification. During and after the war the rating structure grew until it included about 200 ratings. For Regular Navy petty officers the emphasis was still on generalization, but for the Reserves, specialization was stressed.

Now, under the new structure the system will be the same for both Regulars and Reserves. In both components the emphasis will be on broad qualification at the upper pay grade levels (chief, first class and in some cases, second class) and on specialization at the lower petty officer levels (third, and sometimes, second class). Of course, in ratings where specialization is unnecessary, the qualifications will be broad at all levels from PO3 to chief.

The changeover to the new structure is a big job. It will be carried



out gradually in order to give maximum consideration to the men concerned. In some cases, where appropriate and feasible, additional schooling will be provided.

The conversion will involve the disestablishment of all the present Emergency Service Rates in the top two pay grades, the elimination of some ESRs at pay grades E-4 and E-5 in ratings where specialization has been found unnecessary, and the combination of certain closely related ratings with one another. In many cases it will merely formalize the Selective Emergency Service Rating program changes and blend them into the over-all revision of the structure.

As in the present system, there will be three classifications of ratings. However, there will be differences in terminology and application of the new classifications. Since the ratings of both Regulars and Reserves will all be the same, Regulars will not have to switch from General Service to the more specialized Emergency Service Ratings in the event of mobilization or transfer to the Fleet Reserve or inactive duty. And Reserves, transferring to the Regulars or active duty, will not have to be limited to specialists' billets.

In addition to the advantages of the new system in the event of mobilization and the improvements which it should lead to in school and "on-the-job" training, the new structure should make for improvements

in such administrative matters as personnel distribution, allowance and complement writing and the determination of personnel requirements.

Under the revised structure the new classifications will be the:

- **General Rating**, similar to and replacing the present *General Service Rating*, which will reflect qualification in all aspects of the occupational field and assure the development of broadly qualified senior petty officers.

- **Service Rating**, similar to and replacing the present *Emergency Service Rating*, which will reflect qualification in limited areas of an occupational field and provide for specialization where it is needed.

- **Emergency Rating**, similar to and replacing the present *Exclusive Emergency Service Rating*, which will reflect qualification in a civilian skill not identified in the peacetime Navy, but required in wartime.

(The pay grade levels within the General or Service Ratings will be called General or Service Rates.)

For an illustration of the sort of changes that might be made when a rating is revised to fit in with the new structure, here is a hypothetical example showing how the General Rating, Electronics Technician, could be split into Service Ratings at the PO3 level.

Since 1956, when Selective Emergency Service Ratings were authorized for ET, this rating has had four branches — the General Service Rating ET and Emergency Service Ratings for communications (ETN), radar (ETR) and sonar (ETS). Thus, the picture has looked about like this:

General Service Rates		Emergency Service Rates		
ETC		ETNC	ETRC	ETSC
ET1		ETN1	ETR1	ETS1
ET2		ETN2	ETR2	ETS2
ET3		ETN3	ETR3	ETS3

Under the new system (assuming that the ETS rating could be disestablished and the work in that field could be handled by sonarmen and senior petty officers of the ET rating) these 16 rates could be boiled down to just five, yet through the

use of NEC codes in the upper pay grades and Service Rates at the PO3 level, there would still be provision for specialization where it is needed. So, in the new structure the ET rating might look something like this:

General Rates ETC
ET1
ET2

Service Rates ETN3 ETR3

ETCs and ET1s now on duty will recall that a few years back the school for ET required almost a year's work and included four sections—basic electronics, radar, communications and sonar. That year of training cost plenty in dollars and time, yet many of the men who received it served only one enlistment. This meant roughly one year of training and three years' service in the Fleet.

The new concept (already used in the selective emergency service rates program) is designed to start two men through ET training, but instead of giving both of them all of the basic electronics, radar, communications and sonar, one will receive six months of schooling in basic electronics and radar and be designated an ETR, while the other will get about six months of schooling in basic electronics and communications and be designated an ETN. This means half a year of training and three and a half years of service with the Fleet.

Both the ETN3 and ETR3 will know well in advance that to pass the exams for ET2 they will have to broaden their knowledge. This they can do by applying themselves in study and on-the-job training. And, for those who make the Navy a career, additional schooling may be provided.

The revamping of the rating structure was advocated by the Board for General Review of the Enlisted Rating Structure, headed by Rear Admiral Michael F. Flaherty, after a thorough study of the entire rating picture. The Secretary of the Navy approved the concepts for the revision in December and they were explained in BuPers Notice 1223 of 10 Dec 1957. The Permanent Rating Structure Review Board in the Bureau of Naval Personnel has been given the job of initiating the various changes.

To date about 20 ratings have



been considered and the following changes have already been approved:

- Disestablish BMG (Shipboard Boatswain's Mate), BMS (Stevedore) and BMR (Rigger) at all pay grade levels. All men to be designated BM. Establish an Emergency Rating, Stevedore (ESX).
- Disestablish CSG (Ship's Cook), CSB (Butcher) and CSR (Baker) ratings at all pay grade levels. All men to be designated CS.
- Disestablish AOU (Aviation Ordnanceman, Utility) and AOT (Turrets) ratings at all pay grade levels. All men to be designated AO.
- Disestablish AM (Aviation Structural Mechanic) rating at E-5 and E-4 levels, AMS (Structural

Mechanic) at E-7 and E-6 levels and AMH (Hydraulic Mechanic) at E-7 and E-6 levels. Establish new Service Rating, AME (Aviation Structural Mechanic, Safety Equipment) at E-5 and E-4 levels. Thus, the AM rating field, as revised, will consist of six service Rates—AMS2 and 3, AMH2 and 3, and AME2 and 3—and two General Rates, AMC and AMI.

- Disestablish PRS (Parachute Rigger, Survival) and PRM (Maintenance) at all pay grade levels. All men to be designated PR. Transfer PRM duties to AME rating.

- Disestablish SDG (Cook) and SDS (Stateroom Steward) at all pay grade levels. All men to be designated SD.

- Disestablish DTG (Dental Technician, General), DTP (Prosthetic) and DTR (Repair) at all pay grade levels. All personnel to be designated DT.

- Disestablish CE (Construction Electrician's Mate), CEG (General Electrician), CEP (Power Lineman) and CEL (Communications Lineman) at all pay grade levels. Establish General Rating of Construction Electrician (CE) at pay grades E-6 and E-7 and Service Ratings, CEW (Wiring), CEP (Power), CET

HOW DID IT START

USS Utah at Pearl Harbor

While the main attraction for visitors to Pearl Harbor is to board what remains of USS *Arizona*, there is yet another victim of the attack still resting on the bottom—USS *Utah* (AG 16, EX-BB 31).

On 7 Dec 1941, the old battleship *Utah* was moored to the north side of Ford Island, having taken the berth vacated 5 December by the carrier *Lexington*. *Utah* had been converted to a target ship, which meant that she could possibly be mistaken from the air for a carrier. She was completely defenseless.

Three Japanese planes ("Kates") peeled off and let go torpedoes at *Utah* and the cruiser *Raleigh*. *Utah* was hit twice. She listed so rapidly that the senior officer on board ordered the 100-man crew to abandon ship. By 0812 *Utah* was bottom up, a total loss. Except for partial righting done in 1944, she has remained undisturbed ever since.

Fifty-three of her crew are still on



board. A small bronze plaque was erected on her in 1950. The words inscribed are, "In memory, officers and men, USS *Utah*, lost in action 7 December 1941."

(Telephone) and CES (Shop) at pay grades E-4 and E-5.

- Disestablish the General Service Rating, Driver (CD), in all pay grades. Establish the General Rating of Equipment Operator (EO) at pay grades E-6 and E-7 and the Service Ratings EON (Construction) and EOH (Hauling) at pay grades E-4 and E-5.

- Disestablish the General Service Rating of CM (Mechanic) and the Emergency Service Ratings of CMG (Gasoline Engine Mechanic) and CMD (Diesel Engine Mechanic) at all pay grades levels. Establish the General Rating of Construction Mechanic (CM) at pay grades E-6 and E-7 and the Service Ratings of CMA (Automotive) and CMH (Heavy) at pay grades E-4 and E-5.

- Disestablish the Builder (BU) rating at pay grades E-4 and E-5. Disestablish the Emergency Service Ratings, BUL (Builder, Light), and BUH (Builder, Heavy) in all pay grades. Establish the Service Ratings of BUL, BUH and BUR (Concrete) at pay grades E-4 and E-5.

- Disestablish the SW (Steelworker) rating at pay grades E-4 and E-5 and the SWS (Structural Steelworker) and SWR (Construction Rigger) ratings at all pay grade levels. Establish the Service Ratings of SWE (Erector) and SWF (Fabricator) at pay grades E-4 and E-5.

- Disestablish the rating of Utilities Man (UT) at pay grades E-4 and E-5. Establish the Service Ratings of UTP (Plumber), UTA (Air Conditioning), UTB (Boiler-

ANSWERS TO QUIZ AWEIGH

You should get a b-b-b-b-bang out of this as all the answers this month were under "b."

1. Eight-inch 55 caliber.
2. Heavy cruiser.
3. Regulus I.
4. 1000 miles for Regulus II.
5. Sidewinder.
6. Heat or Infrared.

Quiz Aweigh is on page 37.

man) and UTW (Water and Sanitation) at pay grades E-4 and E-5.

These changes, none of which is anticipated to be effective before 1 Mar 1958, will be officially announced in BuPers Notices of the 1440 series.

As the situation now stands, there are 22 ratings in which no changes are expected. These include QM, SM, MN, NW, GS, OM, CT, MA, DK, SH, JO, MU, MR, BT, BR, IC, PM, ML, SV, AG, AK and HM.

The change-over to the new rating structure will make Naval Enlisted Classification Codes (NECs) even more important than they are at present in the identification of skills not shown by rate designation alone. For that reason, it would be a very good idea to check the Manual of NECs (NavPers 15105A) to make sure your special skills are correctly reflected in your rate plus NEC.

List of New Motion Pictures Available for Distribution To Ships and Overseas Bases

The latest list of 16-mm feature movies available from the Navy Motion Picture Service, Bldg. 311, Naval Base, Brooklyn 1, N. Y., is published here for the convenience of ships and overseas bases. The title of each picture is followed by the program number.

Those in color are designated by (C) and those in wide-screen processes by (WS). Distribution began in January.

These films are leased from the movie industry and distributed free to ships and most overseas activities under the Fleet Motion Picture Plan.

Helen Morgan Story (979) (WS): Drama; Ann Blyth, Paul Newman.

Zero Hour (980): Drama; Dana Andrews, Sterling Hayden.

Joe Dakota (981) (C): Drama; Jock Mahoney, Luana Patten.

My Gun is Quick (982): Drama; Robert Bray, Whitney Blake.

Tin Star (983): Drama; Henry Fonda, Tony Perkins.

Island in the Sun (984) (C) (WS): Drama; James Mason, Joan Fontaine.

Mr. Rock and Roll (985): Musical; Alan Freed, Rocky Graziano.

Stowaway Girl (986): Drama; Trevor Howard, Pedro Armendariz.

Hell Bound (987): Drama; John Russell, June Blain.

The Prince and the Showgirl (988) (C): Comedy; Marilyn Monroe, Laurence Olivier.

Bernardine (989) (C) (WS): Drama; Pat Boone, Terry Moore.

Pickup Alley (990) (WS): Drama; Victor Mature, Anita Eckberg.

Battle Hell (991): Drama; Richard Todd, William Hartnell.

Careless Years (992): Drama; Natalie Trundy, Dean Stockwell.

Jet Pilot (993) (C): Drama; John Wayne, Janet Leigh.

Will Success Spoil Rock Hunter (994) (C) (WS): Comedy; Jayne Mansfield, Tony Randall.

Hired Gun (995) (WS): Drama; Rory Calhoun, Anne Francis.

Gunsight Ridge (996): Adventure-Drama; Joel McCrea, Mark Stevens.

Band of Angels (997) (C): Drama; Clark Gable, Yvonne De Carlo.

The Joker is Wild (998): Comedy-Drama; Frank Sinatra, Mitzi Gaynor.

Regular and Reserve Officers Selected for Promotion

The President has approved the recommendations of selection boards for temporary promotion of 1677 Regular Navy and Naval Reserve staff corps officers on active duty.

Numbers of those selected are: *lieutenant commander*: Medical Service Corps, 56; Supply Corps, 291; Chaplain Corps, 49; Civil Engineer Corps, 77; Dental Corps, 29; Medical Corps, 87; Nurse Corps, 698; *lieutenant*: Medical Service Corps, 56; Supply Corps, 148; Chaplain Corps, 37; Civil Engineer Corps, 55; Nurse Corps, 92; Dental Corps, 1; Medical Corps, 1.



"This'll be the first time we missed 'Navy Log' since the night the Chief fell off the fantail."

It's Good News for Shorebound Navymen in Seavey Segment II

SEAVEY SEGMENT TWO, which becomes effective on 1 Jun 1958, will result in longer tours of normal shore duty for some of the top grade petty officers in 17 different ratings.

Under Segment Two, CPOs and first class petty officers in the HM and DT ratings will have 42 months of shore duty. Under the outgoing plan they were ordered ashore for periods of three years. Increased to 30-month normal tours are: CSC, ICC, CEC, UTC, SHC, DCC, SDC, ENC, PMC, BUC, MRC, MLC, SWC, CMC, CMI, CDC, CD1 and CD2. Petty officers in these ratings were formerly given only 24 months of shore duty.

The new shore duty tours will apply only to personnel whose current tours expire on or after 1 Jun 1958. Tours for those who have never been to sea will not be increased.

The increases are being made to insure maximum stability in operating units, greatly needed under current conditions, and yet maintain equitable rotation of personnel. However, your tour of shore duty will not be extended to a date beyond your current expiration of enlistment unless you agree to extend. After 15 Feb. 1958 you must have executed the extension agreement at least seven months before your active obligated service ends. After that point the tour completion date cannot be changed.

Personnel in 22 different rates will have received Segment Two rotation data cards about 1 Mar 1958. However, shore duty orders under the old sea-shore rotation plan will continue to be issued until 15 May 1958. At that time the current shore duty waiting list will be cancelled.

If you are serving on overseas shore duty, or in a non-rotated unit and your tour of duty expires later than 16 months after the effective date of your Seavey Segment, you will not receive a rotation data card. Navymen serving on overseas shore duty whose tour expires after 1 Oct 1959 will receive their rotation data cards in March 1959, provided their tour overseas expires before 1 Oct 1960.

According to BuPers Notice 1306 of 8 Jan 1958, which outlines the

new shore duty tours and Seavey Segment Two procedures, rotation data cards were mailed on 15 February for personnel in the following rates whose sea tours began in the month and year shown or earlier:

CSC	Jan 1956
CS1, 2, 3, CSSN	Dec 1955
SHC	Jul 1956
SH1	Apr 1952
SH2, 3, SHSN	Dec 1951
MMC	Mar 1955
MM1, 2, 3, MMFN	May 1953
ENC	Dec 1955
EN1, 2, 3, ENFN	Jun 1954
MRC, 1, 2, 3, MRFN	Sep 1955
BTC	Aug 1955
BT1, 2, 3, BTFN	Apr 1952
BRC	Aug 1955
BR1	Apr 1952
EMC	Jul 1956
EM1	Jun 1956
EM2, 3, EMFN	Jun 1955
PMC	Jun 1956
PM1, 2, 3, PMFN	Mar 1955
MLC	Aug 1956
ML1, 1, 3, MLFN	Nov 1952
SVC, 1, 2, 3, SVCN	Aug 1956
CEC, 1, 2, 3, CECN	Aug 1956
CDC	Aug 1956
CD1, 2, 3, CDCN	Jan 1956
CMC	Aug 1956
CM1, 2, 3	Jul 1956
CMCN	Dec 1954
BUC, 1, 2	Aug 1956
BU3, BUCN	Feb 1956
ICC, 1, 2	Aug 1956
IC3, ICFN	Feb 1956
MEC	Dec 1955
ME1, 2, 3, MEFN	Apr 1954
FPC	May 1955
FP1, 2, 3, FPFN	Mar 1954
DCC	Apr 1956

DC1	Jul 1955
DC2, 3, DCFN	Apr 1955
SWC	Aug 1956
SW1, 2, 3, SWCN	Aug 1955
UTC, 1, 2, 3, UTCN	Aug 1956
SDC	Aug 1956
SD1, 2, 3, TN	Oct 1953

The difference in sea-tour commencement dates is due primarily to the different ratios of shore billets to sea billets in each rate. Every effort is being made by the Bureau of Naval Personnel to maintain a minimum average sea tour at three years in order to provide optimum Fleet stability. Shore tours are being adjusted in six-month increments each year to provide this stability.

All rotation data cards must be returned to the reporting PAMIs. If cards are not received for eligible personnel, the required information should be sent to the PAMI in a typewritten list or on blank cards which are provided. The lack of obligated service does not make a man ineligible for entry on Seavey.

All personnel whose sea tour commencement date is in or before the month indicated above will be entered on the Seavey regardless of whether a rotation data card is returned or not. The PAMIs will inform commands of the duty preferences on file in BuPers.

For a detailed explanation of both the Seavey and Shorvey programs, see the January 1957 issue of ALL HANDS, pages 28-49.

Just \$700,000 To Go for Memorial Stadium

With \$2,200,000 now on hand for the Memorial Stadium Fund drive, there still remains about \$700,000 to go to reach the goal of \$2,900,000 required to build the stadium, including the plaques and other memorials.

Navymen and Marines afloat and ashore have contributed \$368,000. Since the Sixth and Seventh Fleets are most representative of all types and units, the Memorial Board has agreed to dedicate gates to the memory of Sailors and Marines who have served in the Sixth or Seventh Fleets. Minimum for a gate is \$15,000.

Funds raised by a unit may be

used to dedicate memorial chairs at \$100 per chair, provided that these funds are not also counted in the contribution toward a plaque or other memorial. As an example of ingenuity displayed by fund-raising ships, one unit came up with the idea of holding a drawing among those in the crew who had lost a relative serving in the Navy or Marine Corps during war time. Each winner of the draw would dedicate a memorial chair to his relative.

Ground-breaking ceremonies and official construction on the Stadium started in March. Completion is scheduled for August 1959. Pledges will be accepted through July 1959.

Roundup of Federal Income Tax Information for the Navyman

BY THE TIME YOU READ this the 15 April Federal Income Tax deadline will be about one month away. The W-2 statement of wages paid and taxes withheld will have long since been handed you and by now you should have completed the proper tax return form and mailed it.

If not, you had better work up a full head of steam and settle your debt with Uncle Sam.

The information contained in this article is designed to smooth the way for preparing your return whether you used the simplified, short Form 1040A or the longer Form 1040. For more complete information refer to a copy of Bu-SandA's pamphlet *Federal Income Tax Information*, in your Disbursing Office or Legal Assistant's Office.

However, here in brief are the main points you should know to file a correct return. It is followed by a schedule of tax withholdings based on your monthly income and number of exemptions claimed.

• **Address**—Be sure that your complete mailing address is on the return. It is most important that you furnish your name, rank or rating, branch of service, service serial number, and your permanent home address if you have one. If you have none and the ship is your only home, your address must include the name of the ship as well as the number. If you are based at an overseas shore station, your address must include the name of the station and Navy number.

There's a good reason for making sure that you have the correct address on your return. The Fleet Post Office each year has thousands of pieces of mail incorrectly addressed. Many of them contain refund checks, as well as statements, etc. It's just possible that you, for example, the taxpayer who's due for a refund, haven't received your refund check yet because you did not give the right address.

• **Who Must File**—Practically every individual citizen, single or married (including minors), whose gross income is \$600 or more must file. There are certain exceptions based on old age and self-employment; these may be found in Bu-SandA's pamphlet.



"I kept telling ya, . . . don't overinflate it!"

• **When To File**—Income tax returns based on the calendar year must be filed on or before 15 April. However, if you are living or traveling outside the U. S., the District of Columbia, Alaska or Hawaii, you have until 15 June to file your return (but you will be charged interest on the unpaid tax). In addition, the Director of Internal Revenue for the district in which you normally file your returns may, upon application from you, grant an extension of as much as six months (more if you are abroad).

• **How To Prepare Returns**—Broadly speaking, your income tax is based upon your "gross income" minus "business expenses" and "allowable deductions" (including personal exemptions), multiplied by the tax rates and minus "credits." In other words, certain specified expenses are subtracted from gross income to find "adjusted gross income"; deductions are subtracted from adjusted gross income to find "taxable" income; and the appropriate tax rate is applied to the taxable income to find the amount of tax you owe. Credits for the taxes withheld by your disbursing officer, payments on estimated tax—or for retirement income credit and so forth—are then subtracted from the tax you owe. If the total amount withheld is smaller than the amount you owe, you must pay the difference; if the amount withheld is larger than the amount of your tax—you'll get a refund.

Income That Must Be Reported

• **Gross Income**—This includes gains, profits and income derived from salaries, wages, or compensation for personal service—in short,

money received from almost any source. The following items from naval sources, to the extent that they are not reduced by allowable "business expenses," should be reported as "gross income";

- Active duty pay including incentive and special pay such as "sea pay" and "flight skins."

- Retired pay if retired for other than physical disability resulting from active service.

- Retainer pay of enlisted members transferred to the Fleet Reserve.

- Retired pay of enlisted members transferred to the retired list for other than physical disability resulting from active service.

- Pay of all midshipmen and NavCads, and retainer pay of \$50 and \$100 per month for NROTC and Naval Aviation College Program enrollees.

- Compensation for employment in officers' clubs, messes, station theatres, etc.

- Interest on Navy Savings Deposits and on Armed Forces Leave Bonds or leave payments.

- Lump sum payment received by officers upon honorable discharge or complete separation other than disability severance pay.

- Mileage and per diem received must be reported, but such actual expenses as meals, fares and lodging may be deducted (see below). Mileage and per diem payments are not included on the W-2 form and must be obtained from original orders in your service record or from your pay record.

- Lump-sum readjustments payments to Reservists involuntarily released to inactive duty after five or more years of continuous active duty.

Navy Income That Need Not Be Reported

The following items received from the Navy are excluded from "gross income" and need not be reported:

- Basic allowance for quarters and any amounts paid for quarters, heat and light furnished in kind.

- Basic allowance for subsistence.

- Cost to government for transportation of dependents and household goods.

- Rations furnished in kind to enlisted men.

- Uniform gratuity or clothing

allowance for officer and enlisted.

- Retired pay of persons retired before 1 Oct 1949 for physical disability resulting from active service and who are receiving pay under laws in effect before 1 Oct 1949.

- Disability retirement or severance pay received for separation after 30 Sep 1949 under the Career Compensation Act of 1949.

- Uniforms furnished in kind to enlisted men.

- Death gratuities.

- Personal money allowances received by fleet admirals, admirals and vice admirals.

- Money received by naval attaches for entertaining and exceptional purposes, if expended solely in connection with official duties.

- Mustering out pay.

- State bonus payments for services rendered to the United States.

- Amounts paid to or on behalf of veterans under the WW II and Korean GI Bills.

Deductible Items

Adjusted Gross Income—Deducting any applicable items in the following list from your gross income will give you your "adjusted gross income." The following are deductible items.

- Mess bills afloat—An officer with or without dependents who is assigned permanent duty afloat, may deduct mess bills for any periods during which his ship is away from its home port for longer than an ordinary work day. The same principle applies to air personnel away from a squadron's home base.

- Travel expense—the actual expenses may be deducted if you are traveling in a mileage or per diem status.

- Transportation expenses may be deducted by Reserve personnel if incurred while performing authorized drills under competent orders, even if they do not receive reimbursement for such travel.

- Expenses attributable to rents and royalties are deductible.

- Losses from sale or exchange of business property are deductible items in computing taxable income.

- Deductions from adjusted gross income—Once you have found your adjusted gross income you may make deductions for the following items to which you are entitled. You do this only if you are filing the long

form (Form 1040) in which you itemize your deductions. If you are filing the short Form 1040 or 1040A you will receive a standard and automatic deduction of about 10 percent of the adjusted gross income.

- Contributions paid during the taxable year for exclusive public use (churches, United Givers Fund, Red Cross, Navy Relief, USO, etc.).

- Interest on personal indebtedness, such as mortgage on real estate or, under certain circumstances and to a limited extent, carrying charges on installment purchases of personal property.

- As a general rule, state and local taxes are deductible by the person upon whom they are imposed by law. However, federal excise taxes (luxury taxes), Federal income and certain foreign taxes are not deductible.

- During periods of illness or hospitalization you may (under certain circumstances) be entitled to deduct your pay (up to a total of \$100 weekly). To support a claim for this exclusion, however, you should furnish a statement from the attending physician, the hospital, the employer, or other acceptable evidence of absence, illness, and rate of payment. You may not deduct the first seven calendar days of such a period unless the absence is a result of injury or you are hospitalized at least one day.

- Child care, a deduction limited to \$600, is allowed working women or widowers, as well as men who are legally separated or divorced, for the expense of caring for certain of their dependents in order that the taxpayer may be gainfully employed. A married woman may claim the deduction only if she files a joint return with her husband. Then the \$600 is reduced by the amount of their joint income over \$4500.

- Losses. For example, a loss occasioned by damage to your own automobile is deductible to the extent that it is not covered by insurance, unless it is the result of a willful negligence on your part.

- Miscellaneous deductible items include uniform equipment (insignia of rank, corps, etc.); amount of reenlistment bonus refunded by reason of termination of enlistment; alimony payments, if included in the wife's gross income; dues to profes-

The newest of submarine rescue chambers, RC-21, which employs new design concepts of operation, valving, lighting and method of sealing to a sunken submarine, has been delivered to USS Sunbird (ASR 15) for a series of tests.

The purpose of the rescue chamber is to evacuate men from a sunken submarine. It is designed to carry two operators and eight passengers. In an extreme emergency, the number of men carried may be considerably increased. In rescue operations, the rescue chamber is independent of the submarine; all necessary power and assistance for its operation is provided by the rescue ship.

In the rescue chamber design, the motor control, gauges, valves, manifolds and communications systems are arranged to provide the best visibility and operation. The blow and vent manifold has been provided with "distinctive touch" valve handles to enable operation under emergency conditions where lighting might fail.

A quick opening valve seals the RC-21 to a submarine by immediately allowing a "slug" of water from the lower chamber to enter a tank within the rescue chamber. The lights in the



lower chamber are embedded in polyester resin plastic and can withstand full submergence pressure and severe thermal shock. They are placed in a complete circle around the seating ring where light is most needed. Padded seats, seat belts and the guarding of all machinery protect men from injury. The chamber also has a potential for deeper submergence than previous rescue chambers to suit future submarine development.

Communication is provided by use of an AN/BQC sonar system. With this system, contact can be maintained between the sunken submarine, the rescue chamber and the surface ship. A sound-powered telephone is used as a standby system. The wire for the telephone is included in the main power cable.

Table of Withholding Taxes on Navy Pay

To find out your service pay subject to withholding, see story

If your monthly wages subject to withholding are—

And the number of withholding exemptions* claimed is—

At least	But less than	The amount of tax to be withheld will be—						
		0	1	2	3	4	5	6
\$ 0	\$ 56	18% of wages	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0
\$ 56	\$ 60	\$10.40	4.00	0	0	0	0	0
\$ 60	\$ 64	11.20	1.20	0	0	0	0	0
\$ 64	\$ 68	11.90	1.90	0	0	0	0	0
\$ 68	\$ 72	12.60	2.60	0	0	0	0	0
\$ 72	\$ 76	13.30	3.30	0	0	0	0	0
\$ 76	\$ 80	14.00	4.00	0	0	0	0	0
\$ 80	\$ 84	14.80	4.80	0	0	0	0	0
\$ 84	\$ 88	15.50	5.50	0	0	0	0	0
\$ 88	\$ 92	16.20	6.20	0	0	0	0	0
\$ 92	\$ 96	16.90	6.90	0	0	0	0	0
\$ 96	\$ 100	17.60	7.60	0	0	0	0	0
\$ 100	\$ 104	18.40	8.40	0	0	0	0	0
\$ 104	\$ 108	19.10	9.10	0	0	0	0	0
\$ 108	\$ 112	19.80	9.80	0	0	0	0	0
\$ 112	\$ 116	20.50	10.50	.50	0	0	0	0
\$ 116	\$ 120	21.20	11.20	1.20	0	0	0	0
\$ 120	\$ 124	22.00	12.00	2.00	0	0	0	0
\$ 124	\$ 128	22.70	12.70	2.70	0	0	0	0
\$ 128	\$ 132	23.40	13.40	3.40	0	0	0	0
\$ 132	\$ 136	24.10	14.10	4.10	0	0	0	0
\$ 136	\$ 140	24.80	14.80	4.80	0	0	0	0
\$ 140	\$ 144	25.60	15.60	5.60	0	0	0	0
\$ 144	\$ 148	26.30	16.30	6.30	0	0	0	0
\$ 148	\$ 152	27.00	17.00	7.00	0	0	0	0
\$ 152	\$ 156	27.70	17.70	7.70	0	0	0	0
\$ 156	\$ 160	28.40	18.40	8.40	0	0	0	0
\$ 160	\$ 164	29.20	19.20	9.20	0	0	0	0
\$ 164	\$ 168	29.90	19.90	9.90	0	0	0	0
\$ 168	\$ 172	30.60	20.60	10.60	.60	0	0	0
\$ 172	\$ 176	31.30	21.30	11.30	1.30	0	0	0
\$ 176	\$ 180	32.00	22.00	12.00	2.00	0	0	0
\$ 180	\$ 184	32.80	22.80	12.80	2.80	0	0	0
\$ 184	\$ 188	33.50	23.50	13.50	3.50	0	0	0
\$ 188	\$ 192	34.20	24.20	14.20	4.20	0	0	0
\$ 192	\$ 196	34.90	24.90	14.90	4.90	0	0	0
\$ 196	\$ 200	35.60	25.60	15.60	5.60	0	0	0
\$ 200	\$ 204	36.40	26.40	16.40	6.40	0	0	0
\$ 204	\$ 208	37.10	27.10	17.10	7.10	0	0	0
\$ 208	\$ 212	37.80	27.80	17.80	7.80	0	0	0
\$ 212	\$ 216	38.50	28.50	18.50	8.50	0	0	0
\$ 216	\$ 220	39.20	29.20	19.20	9.20	0	0	0
\$ 220	\$ 224	40.00	30.00	20.00	10.00	0	0	0
\$ 224	\$ 228	40.70	30.70	20.70	10.70	.70	0	0
\$ 228	\$ 232	41.40	31.40	21.40	11.40	1.40	0	0
\$ 232	\$ 236	42.10	32.10	22.10	12.10	2.10	0	0
\$ 236	\$ 240	42.80	32.80	22.80	12.80	2.80	0	0

To find out your service pay subject to withholding, see story

If your monthly wages subject to withholding are—

And the number of withholding exemptions* claimed is—

At least	But less than	The amount of tax to be withheld will be—						
		0	1	2	3	4	5	6
\$ 240	\$ 248	43.90	33.90	23.90	13.90	3.90	0	0
\$ 248	\$ 256	45.40	35.40	25.40	15.40	5.40	0	0
\$ 256	\$ 264	46.80	36.80	26.80	16.80	6.80	0	0
\$ 264	\$ 272	48.20	38.20	28.20	18.20	8.20	0	0
\$ 272	\$ 280	49.70	39.70	29.70	19.70	9.70	0	0
\$ 280	\$ 288	51.10	41.10	31.10	21.10	11.10	1.10	0
\$ 288	\$ 296	52.60	42.60	32.60	22.60	12.60	2.60	0
\$ 296	\$ 304	54.00	44.00	34.00	24.00	14.00	4.00	0
\$ 304	\$ 312	55.40	45.40	35.40	25.40	15.40	5.40	0
\$ 312	\$ 320	56.90	46.90	36.90	26.90	16.90	6.90	0
\$ 320	\$ 328	58.30	48.30	38.30	28.30	18.30	8.30	0
\$ 328	\$ 336	59.80	49.80	39.80	29.80	19.80	9.80	0
\$ 336	\$ 344	61.20	51.20	41.20	31.20	21.20	11.20	1.20
\$ 344	\$ 352	62.60	52.60	42.60	32.60	22.60	12.60	2.60
\$ 352	\$ 360	64.10	54.10	44.10	34.10	24.10	14.10	4.10
\$ 360	\$ 368	65.50	55.50	45.50	35.50	25.50	15.50	5.50
\$ 368	\$ 376	67.00	57.00	47.00	37.00	27.00	17.00	7.00
\$ 376	\$ 384	68.40	58.40	48.40	38.40	28.40	18.40	8.40
\$ 384	\$ 392	69.80	59.80	49.80	39.80	29.80	19.80	9.80
\$ 392	\$ 400	71.30	61.30	51.30	41.30	31.30	21.30	11.30
\$ 400	\$ 420	73.80	63.80	53.80	43.80	33.80	23.80	13.80
\$ 420	\$ 440	77.40	67.40	57.40	47.40	37.40	27.40	17.40
\$ 440	\$ 460	81.00	71.00	61.00	51.00	41.00	31.00	21.00
\$ 460	\$ 480	84.60	74.60	64.60	54.60	44.60	34.60	24.60
\$ 480	\$ 500	88.20	78.20	68.20	58.20	48.20	38.20	28.20
\$ 500	\$ 520	91.80	81.80	71.80	61.80	51.80	41.80	31.80
\$ 520	\$ 540	95.40	85.40	75.40	65.40	55.40	45.40	35.40
\$ 540	\$ 560	99.00	89.00	79.00	69.00	59.00	49.00	39.00
\$ 560	\$ 580	102.60	92.60	82.60	72.60	62.60	52.60	42.60
\$ 580	\$ 600	106.20	96.20	86.20	76.20	66.20	56.20	46.20
\$ 600	\$ 640	111.60	101.60	91.60	81.60	71.60	61.60	51.60
\$ 640	\$ 680	118.80	108.80	98.80	88.80	78.80	68.80	58.80
\$ 680	\$ 720	126.00	116.00	106.00	96.00	86.00	76.00	66.00
\$ 720	\$ 760	133.20	123.20	113.20	103.20	93.20	83.20	73.20
\$ 760	\$ 800	140.40	130.40	120.40	110.40	100.40	90.40	80.40
\$ 800	\$ 840	147.60	137.60	127.60	117.60	107.60	97.60	87.60
\$ 840	\$ 880	154.80	144.80	134.80	124.80	114.80	104.80	94.80
\$ 880	\$ 920	162.00	152.00	142.00	132.00	122.00	112.00	102.00
\$ 920	\$ 960	169.20	159.20	149.20	139.20	129.20	119.20	109.20
\$ 960	\$1000	176.40	166.40	156.40	146.40	136.40	126.40	116.40

18 per cent of the excess over \$1,000 plus—

\$1000 and over	180.00	170.00	160.00	150.00	140.00	130.00	120.00
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* Exemptions—to find out the number of exemptions to which you are entitled (including exemption for yourself) see story. If you are entitled to more than six exemptions, consult the computing withholding tax table.

sional societies, etc.

Items which are not deductible from your adjusted gross income include: Personal living or family expenses other than the exceptions noted above; cost of moving and shipping household goods; cost of transportation of dependents; premiums paid on life insurance policies; expenses of visiting home while on furlough, leave or liberty; and, amounts paid for U.S. Savings Bonds.

Your Exemptions

Exemptions for you and your dependents are treated as deductions from adjusted gross income in arriving at "taxable income." The amount of exemption allowed for each dependent is \$600 and exemptions are allowed for the following:

- You, the taxpayer.
- Your spouse.
- Each "dependent." You can

claim credit only for persons who meet all of the dependency requirements listed on the instructions accompanying Forms 1040 and 1040A.

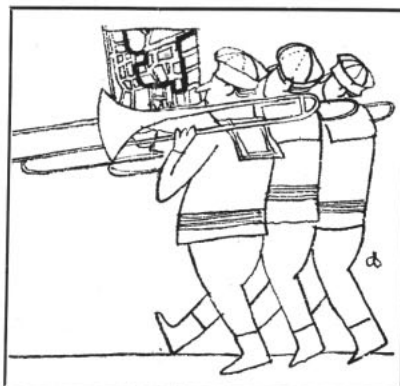
An individual receiving support from two or more persons, none of whom furnishes more than half, may be claimed as a dependent under

certain circumstances. The conditions are listed in the tax instructions.

Citizens of foreign countries will not qualify as dependents unless they are residents of either the U. S., Canada, Mexico, Canal Zone or the Republic of Panama.

A child born or legally adopted in the Philippine Islands before 1 Jan 1956 may be claimed as your dependent if you were a member of the U. S. armed forces at the time the child was born or adopted, and the child is a resident of the Philippine Islands during the taxable year.

A last word of warning! If you have not already filed your return for 1957, get busy. There are penalties (some severe) for not filing and if you do not send in your return you will not collect any refund which may be due you.



You Will Be Interested in This (Tax) News from Back Home

YOU ARE NO DOUBT FAMILIAR with the pamphlet containing federal income tax information published and distributed by the Bureau of Supplies and Accounts. This pamphlet is designed primarily for the use of Navymen on active duty and describes their rights and liabilities under federal income tax laws.

However, certain states, territories and possessions of the United States also have their own income tax laws under which you may have liabilities, in addition to the federal income tax. Below, you will find a summary of the requirements of the local income tax laws, as prepared by BuSandA.

You should note that, unless your state makes a special exception, members of the armed forces are not excused from state and local income taxes merely because they are on active duty.

Generally speaking, if you are a legal resident of a state on the last day of the taxable year, you are liable to the income tax laws of that state, even though you did not actually live there during the entire year. Furthermore, you are usually liable for income taxes to the state in which you live or earn your income, as well as the state in which you are a legal resident. However, Section 514 of the Soldiers' and Sailors' Civil Relief Act of 1940, as amended, provides that *a member of the armed forces, who is a*



"A table near the water, please!"

legal resident of one state but lives in another state ONLY because of his military orders, is not liable to the state in which he is living for income taxes on his service pay. This does NOT apply to retired or retainer pay, OR the separate income of any member of your family, or any of your income derived from other sources.

Let's say, for example, that your legal residence is Ohio, but you received orders to Washington, D.C., and have moved to Arlington, Va., with your family. You have no income other than your service pay. Since Ohio has no income tax laws, you are not required to file a return to the state of Ohio and, under the Soldiers' and Sailors' Civil Relief Act, you are not liable for filing a Virginia return. You have no prob-

lems—state income tax problems, that is.

Let's assume, however, that your friend came from Vermont and is on active duty in California. He pays income taxes in Vermont. He buys a house in California, not for the purpose of changing his legal residence, but only for a place to live while on duty in California. He intends to return to Vermont after his tour of active duty. He will be required to continue to file his state return to Vermont and under Section 514, California will not be able to impose an income tax on his service pay, even though he owns real estate in that state. However, if he is transferred from California and decides to rent his house as investment property, he would be liable to file a California return to report the rental income. If he decides to change his legal residence to California, he will then, of course, be subject to California state income tax laws.

Below, you will find a table which shows features of the income tax laws of the state, territorial and insular possessions of the United States. It primarily indicates the income requirements for filing of returns by residents of states having income tax laws, the personal exemptions allowed, due dates for filing and paying taxes, the state office from which further details may be obtained applicable to servicemen.

SUMMARY OF INCOME-TAX LAWS OF STATES, TERRITORIES, AND POSSESSIONS

NOTE: 1. "Married couple" or "married" as used in this summary means husband and wife living together.

2. A married service man or woman is considered to be living with his or her spouse when separated only by reason of military orders.

Amount of income which requires residents to file returns	Personal exemptions	Due date for return and payments	Title and address of taxing authority	Special provisions applicable to armed services personnel
ALABAMA:				
Net income of: \$1,500 or more if single; \$3,000 if married or head of family. Declaration of estimated tax required if net income other than wages exceeds \$1,500 for an individual and \$3,000 for married couples.	\$1,500 if single; \$3,000 if married or head of family; \$300 for each dependent.	Return due 15 April. Payment with return. Declaration due 15 April. Payment of estimated tax with declaration or in installments.	State Department of Revenue, Income Tax Division, Montgomery 2, Alabama	None. Members of Armed Forces outside Continental United States may defer filing until 30 days after return to United States.

THE BULLETIN BOARD

Amount of income which requires residents to file returns	Personal exemptions	Due date for return and payments	Title and address of taxing authority	Special provisions applicable to armed services personnel
ALASKA: Gross income of \$600 or more from sources within the Territory.	\$600 for taxpayer; \$600 for spouse; \$600 for each dependent. \$600 additional for taxpayer and spouse for blindness and being 65 or over.	Return due 15 April. Payment with return.	Department of Taxation, Territory of Alaska, Alaska Office Building, Juneau, Alaska.	All active-service pay is exempt beginning 1 Janu- ary 1951. Members of Armed Forces may defer paying until 6 months after discharge if ability to pay is impaired by rea- son of military or naval service.
ARIZONA: Net income of \$1,000 or more if single; \$2,000 or more if married; gross income of \$5,000 or more.	\$1,000 if single; \$2,000 if married or head of household; \$600 for each dependent. \$500 additional for taxpayer and spouse for blind- ness.	Return due 15 April. Payment with return or in three equal install- ments.	Arizona State Tax Commission, Income Tax Division, Phoenix, Arizona.	\$1,000 active-service pay is exempt. Members of Armed Forces outside con- tinental United States may defer filing returns and payment of tax, without interest or penalty, until 180 days after release or termination of the emer- gency, whichever is the earlier.
ARKANSAS: Gross income of: \$1,750 or more if single or separated from spouse; \$3,500 or more if married or head of family.	Credit from tax: \$17.50 if single; \$35 if married or head of a family; \$6 for each dependent.	Return due 15 May. Pay- ment with return or in two equal installments.	State of Arkansas, Department of Revenue, Little Rock, Arkansas.	All active-service pay is excluded from gross in- come.
CALIFORNIA: Net income of: \$2,000 or more if single or head of household; \$3,500 or more if married. Gross income of: \$5,000 or more.	\$2,000 if single; \$3,500 if married or head of household; \$400 for each dependent. \$500 addi- tional for taxpayer and spouse for blindness.	Return due 15 April. Payment with return or in three equal install- ments.	State of California Franchise Tax Board, 1020 N Street, Sacramento 14, California.	\$1,000 active-service pay received after 30 June 1952 is exempt. Members of Armed Forces outside Continental United States on or after 8 April 1953 granted automatic exten- sion for filing returns and payment of tax, without penalty or interest, until 180 days after return to United States, or 6 June 1955, whichever is later, if released after 8 Decem- ber 1954.
COLORADO: Gross income of \$750 or more.	\$750 for taxpayer; \$750 for spouse on joint re- turn; \$750 for each dependent. \$750 addi- tional for taxpayer and spouse for blindness and being 65 or over.	Return due 15 April. Payment with return.	State of Colorado, Department of Revenue, State Capitol Annex, Denver 2, Colorado.	\$2,000 of active or re- serve service pay is ex- cluded from gross income during a time of war or national emergency; \$1,000 may be excluded during any year that the United States is not in a state of war or national emergency. (The \$2,000 exclusion will apply to 1957.) Members of the Armed Forces may defer filing returns and pay- ment of tax without pen- alty or interest until one year after separation.

<i>Amount of income which requires residents to file returns</i>	<i>Personal exemptions</i>	<i>Due date for return and payments</i>	<i>Title and address of taxing authority</i>	<i>Special provisions applicable to armed services personnel</i>
CONNECTICUT:				
None.				
DELAWARE:				
Gross income of: \$600 or more if single or separated from spouse; \$1,200 combined gross income of married couple.	\$600 for taxpayer; \$600 for spouse; \$600 for each dependent; \$600 additional for taxpayer and spouse for blindness and being 65 or over.	Return due 30 April. Payment with return or in four equal installments if tax exceeds \$5.	State of Delaware, Tax Department, 843 King Street, Wilmington 99, Delaware.	None. Members of Armed Forces may, upon written application, be granted deferment for filing and paying until 6 months after discharge.
DISTRICT OF COLUMBIA:				
Gross income of: More than \$1,000 if single, or separated from spouse; more than \$2,000 of combined income of married couple; or gross receipts of more than \$5,000. Declaration of estimated tax required if gross income from wages subject to D.C. withholding plus \$1,000 or less from other sources exceeds personal exemptions plus \$5,000; or if gross income includes more than \$1,000 not subject to D.C. withholding and exceeds personal exemptions plus \$500.	\$1,000 if single or separated from spouse; \$2,000 if married or head of family; \$500 for each dependent. \$500 additional for taxpayer and spouse for blindness and being over 65 or over.	Return due 15 April. Payment with return. Declaration due 15 April. Payment of estimated tax due with declaration or in installments.	District of Columbia Income and Franchise Tax Division, Room 2033, Municipal Center, 300 Indiana Ave. N.W., Washington 1, D.C.	None. Deferment for filing returns or paying taxes granted members of Armed Forces outside the United States until 6 months after return.
FLORIDA:				
None.				
GEORGIA:				
Gross Income of: \$1,500 or more if single or separated from spouse; \$3,000 combined gross income of married couple.	\$1,500 if single; \$3,000 if married or head of family; \$600 for each dependent. \$600 additional for taxpayer and spouse for blindness and being 65 or over.	Return due 15 April. Payment with return or in three equal installments if tax exceeds \$30.	Department of Revenue, Income Tax Unit, 502 State Office Building, Atlanta 3, Georgia.	\$1,500 active-service pay is excluded from gross income from 1 January 1950 until termination of the Korean conflict. (This exclusion will apply for 1957.) Deferment for filing returns or paying taxes granted members of the Armed Forces outside continental United States until the 15th day of the sixth month after return to the United States.
GUAM:				
Gross income of: \$600 or more.	\$600 for taxpayer; \$600 for spouse; \$600 for each dependent. \$600 additional for taxpayer and spouse for blindness and being 65 or over.	Return due 15 April. Payment with return.	Division of Revenue and Taxation, Commissioner's Office, Department of Finance, Government of Guam, P.O. Box 1086, Agaña, Guam.	Income of members of Armed Forces subject to same computations as for Federal returns.

THE BULLETIN BOARD

Amount of income which requires residents to file returns	Personal exemptions	Due date for return and payments	Title and address of taxing authority	Special provisions applicable to armed services personnel
HAWAII: Any amount from rents or a profession. Other income from within or without the territory — \$1,100 if single, \$2,200 if married, or gross income from compensation and/or dividends taxable under the Compensation and Dividends Tax Law, with exception of \$50 or less interest, etc., \$2,850 if single, \$5,900 if married.	\$1,000 if single; \$2,000 if married or head of family; \$200 for each dependent. \$5,000 exemption in lieu of normal exemption for taxpayer if blind.	Net income tax: Return due 20 April. Payment with return or in four equal installments. Compensation and dividends tax: Return and payment due on or before 20th day of each month.	Bureau of Income and Miscellaneous Taxes, Territory of Hawaii, Department of the Tax Commissioner, P.O. Box 259, Honolulu 9, Hawaii.	Compensation received from the United States for service in the Armed Forces is excluded from gross income. Members of Armed Forces may defer paying not later than 6 months after discharge if ability to pay is impaired by reason of such service.
IDAHO: Net income in excess of personal exemptions.	\$700 if single; \$1,500 if married; \$200 for each dependent. \$5 credit from tax for each dependent in addition to exemption.	Return due 15 April. Payment with return or in two equal installments.	State of Idaho, Office of Tax Collector, Income Tax Division, P.O. Box 1399, Boise, Idaho.	Idaho servicemen exempt if serving outside the State. Members of Armed Forces outside continental limits of United States may defer filing returns and paying taxes until 6 months after discharge.
ILLINOIS: None.				
INDIANA: Gross income over \$1,000. Joint returns not permitted.	\$1,000 for each taxpayer.	Quarterly returns (required when tax for any quarter exceeds \$25) due by 30 April, 31 July, and 31 October. Annual return due 31 January. Payment with return.	Indiana Department of State Revenue, Gross Income Tax Division, 141 South Meridian Street, Indianapolis 13, Indiana.	All active-service pay is exempt. Members of Armed Forces may defer filing returns and paying tax until 6 months after discharge.
IOWA: Net income of: \$1,500 or over if single, or separated from spouse; \$2,350 or over if married; or married couple with combined net income of \$2,000 or over if filing separate returns.	Credit from tax: \$15 if single; \$30 if married or head of family; \$7.50 for each dependent.	Return due 30 April. Payment due with return or in two equal installments if tax is \$10 or more.	State Tax Commissioner, Income Tax Division, State Office Building, Des Moines 19, Iowa.	None.
KANSAS: Net income of: \$600 or more if single or separated from spouse; \$1,200 or more if married. Gross income of: \$4,000 or more.	\$600 for taxpayer; \$600 for spouse; \$600 for each dependent; \$600 additional for taxpayer and spouse for blindness and being 65 or over.	Return due 15 April. Payment with return or in two equal installments.	State of Kansas, Department of Revenue, Income Tax Division, Statehouse, Topeka, Kansas.	\$1,500 active-service pay excluded from gross income until the termination of the present world crisis as determined by the Executive Council of the State. Deferment granted members of Armed Forces for filing returns and paying taxes until 1 year after discharge or 1 year after termination of present world crisis, whichever is earlier.

Amount of income which requires residents to file returns	Personal exemptions	Due date for return and payments	Title and address of taxing authority	Special provisions applicable to armed services personnel
KENTUCKY:				
Gross income of \$600 or more; \$1,200 if individual is 65 years of age. Declaration of estimated tax required if gross income will be \$600 or more, and if gross income from sources other than wages will be \$100 or more.	Credit from tax: \$12 for taxpayer; \$12 for spouse; \$12 for each dependent. \$12 additional for taxpayer and spouse 65 or over, or blind.	Return due 15 April. Payment with return. Declaration due 15 April. Payment of estimated tax with declaration or in installments.	Commonwealth of Kentucky, Department of Revenue, Frankfort, Kentucky.	None. Members of the Armed Forces who were drafted or are temporarily on active duty may defer filing returns and paying taxes until 12 months after termination of the national emergency, or termination of military service, whichever is earlier.
LOUISIANA:				
Net income of \$2,500 or more if single or separated from spouse; \$5,000 or more if married. Gross income of: \$6,000 or more.	\$2,500 if single; \$5,000 if married or head of family; \$400 for each dependent.	Return due 15 May. Payment with return or in three equal installments.	State of Louisiana, Department of Revenue, Baton Rouge 1, Louisiana.	None. Members of Armed Forces on sea or foreign service duty, and prisoners of war, on due date of return have deferment until the earliest of: the month they cease to be a prisoner of war, or cease to be on sea or foreign service duty, or the end of the war.
MAINE:				
None.				
MARYLAND:				
Gross income in excess of: \$800 if single; \$1,600 if married or head of family. Declaration of estimated tax required if income will be \$500 or more not subject to withholding, and total gross income will be \$1,500 or more if single and \$2,500 or more if married.	\$800 if single; \$1,600 if married; \$800 for each dependent. \$800 additional for taxpayer and spouse if over 65 or blind, and for dependents over 65.	Return due 15 April. Payment with return. Declaration due 15 April. Payments of estimated tax with declaration or in installments.	State of Maryland, Comptroller of the Treasury, Income Tax Division, Annapolis, Maryland.	\$1,500 of active-service pay excluded from gross income during time of war or while in combat zone. Members of Armed Forces outside continental United States may defer filing until 3 months after return.
MASSACHUSETTS:				
Earned income of \$2,000 or more. Other taxable income in any amount.	\$2,000 for taxpayer against earned income; \$500 for spouse; \$400 for each dependent. \$2,000 additional for blindness.	Return due 15 April. Payment with return.	The Commonwealth of Massachusetts, Department of Corporations and Taxation, Income Tax Division, 40 Court Street, Boston, Massachusetts.	None.
MICHIGAN:				
None.				
MINNESOTA:				
Gross income in excess of: \$1,000 if single; \$2,000 if married or head of household, or if combined income of married couple exceeds \$2,000.	Credit from tax: \$10 if single; \$30 if married or head of household; \$10 for each dependent. Additional credits for taxpayers for blindness and being 65 or over.	Return due 15 April. Payment with return or in two equal installments.	State of Minnesota, Department of Taxation, Income Tax Division, 156 East 6th Street, St. Paul 1, Minnesota.	\$3,000 active-service pay excluded from gross income. Members of Armed Forces outside continental United States continuously for more than 90 days granted extension of time until 6 months after return.

THE BULLETIN BOARD

Amount of income which requires residents to file returns	Personal exemptions	Due date for return and payments	Title and address of taxing authority	Special provisions applicable to armed services personnel
MISSISSIPPI: Net income in excess of personal exemptions. Gross income over \$6,000.	\$4,000 if single; \$6,000 if married. No personal exemption for dependents.	Return due 15 April. Payment with return or in four equal installments.	State Tax Commission, Income Tax Division, Jackson, Mississippi.	None.
MISSOURI: Gross income of \$1,200 or more if single; \$2,400 or more if married or head of family.	\$1,200 if single; \$2,400 if married or head of family; \$400 for each dependent.	Return due 15 April. Payment with return.	State of Missouri, Department of Revenue, Division of Tax Collection (Income Tax), P.O. Box 629, Jefferson City, Missouri.	\$3,000 active-service pay exempt beginning with calendar year 1951.
MONTANA: Net income of \$600 or over if single; \$1,200 or more if married or head of family. Gross income of: \$1,200 or more. Declaration of estimated tax required where income not subject to withholding can be exacted to equal or exceed income subject to withholding.	\$600 if single; \$1,200 if married or head of family; \$600 for each dependent. \$600 additional for taxpayer and spouse for blindness and being 65 or over.	Return due 15 April. Payment with return. Declaration due 15 April. Payment of estimated tax with declaration or in two installments.	State of Montana, Board of Equalization, State Capitol Building, Helena, Montana.	None. Members of Armed Forces may defer filing returns and paying taxes until 6 months after discharge in cases of undue hardship caused by military service.
NEBRASKA: None.				
NEVADA: None.				
NEW HAMPSHIRE: Any amount of taxable income from interest or dividends. Joint returns not permitted.	\$600 for each taxpayer.	Return due 1 May. Payment with return.	State Tax Commission, Interest and Dividends Division, Box 345, Concord, New Hampshire.	None.
NEW JERSEY: None.				
NEW MEXICO: Gross income of: \$1,500 or more if single; \$2,500 or more if married.	\$1,500 if single; \$2,500 if married. \$200 for each dependent.	Return due 15 April. Payment with return or in four equal installments.	State of New Mexico, Income Tax Division, Bureau of Revenue, P.O. Box 451, Santa Fe, New Mexico.	None.
NEW YORK: Combined net income and capital gain of: \$1,000 or more if single or separated from spouse; \$2,500 or more if married or head of family. (Note: Net income is computed without deduction of capital losses.) Combined gross income and capital gain of \$5,000 or more.	\$1,000 if single; \$2,500 if married or head of family; \$400 for each dependent; \$800 if over 18 and full-time student. \$400 additional for taxpayer and spouse for blindness and being 65 or over (reduced by gross income over \$6,000.)	Return due 15 April. Payment with return or in installments if tax is more than \$10, but no payment except the last may be less than \$10; four equal installments if tax is more than \$40.	State of New York, Department of Taxation and Finance, Income Tax Bureau, Albany 1, New York.	None, except that domiciliaries who maintain no permanent place of abode in New York, and who spend no more than 30 days of the year in the State are exempt.

Amount of income which requires residents to file returns	Personal exemptions	Due date for return and payments	Title and address of taxing authority	Special provisions applicable to armed services personnel
NORTH CAROLINA:				
Gross income of: \$1,000 if single, or if a married woman with separate income; \$2,000 if a married man living with his wife. Gross income from business or profession in excess of personal exemption. Joint return not permitted.	\$1,000 if single, or a married woman living with her husband; \$2,000 if married man living with his wife, or head of household; \$2,000 if widow or widower with minor child; \$300 for each dependent. \$1,000 additional if blind.	Return due on or before 15 April. Payment due with return or in two equal installments if tax is over \$50; four equal installments if tax is more than \$400.	State of North Carolina, Department of Revenue, Individual Income Tax Division, Raleigh, North Carolina.	None.
NORTH DAKOTA:				
Net income of \$600 or more if single or separated from spouse; \$1,500 or more if married or head of household. Gross income of: \$5,000 or more.	\$600 if single; \$1,500 if married or head of household; \$600 for each dependent. \$600 additional for taxpayer and spouse 65 or over, or blind.	Return due 15 April. Payment with return or in installments if tax exceeds \$100.	State of North Dakota, Office of Tax Commissioner, State Capitol Building, Bismarck, North Dakota.	All active-service pay is exempt. Deferment granted to members of Armed Forces until the 15th day of 6th month following discharge.
OHIO:				
No personal income tax, but residents of some Ohio cities and municipalities may be liable for income taxes.				
OKLAHOMA:				
Gross income of: \$1,000 or more if single; \$2,000 if married.	\$1,000 if single; \$2,000 if married or head of family; \$500 for each dependent.	Return due 15 April. Payment with return or in installments if the tax is \$25 or more.	Oklahoma Tax Commission, State of Oklahoma, Income Tax Division, Oklahoma City 5, Oklahoma.	\$1,500 of active-service pay excluded from gross income. Members of Armed Forces outside the United States, or confined to a hospital in the United States, may defer filing returns and payment of tax, without interest or penalty, until the 15th day of the third month following return to United States, or discharge from such hospital.
OREGON:				
Net income in excess of personal exemptions.	\$600 if single, or separated from spouse; \$1,200 if married or head of family; \$600 for each dependent. \$600 additional for taxpayer or spouse if blind plus \$18 credit against tax. \$12 credit against tax for taxpayer or spouse if 65 or over in addition to personal exemption. \$1 credit for each \$100 contributed for support of each dependent in addition to personal exemption.	Return due 15 April. Payment with return or in installments if tax exceeds \$25.	Oregon State Tax Commission, Income Division, 100 State Office Building, Salem, Oregon; or State Tax Commission, 1400 S.W. 5th Avenue, Portland, Oregon.	\$3,000 active-service pay is excluded from gross income. Members of Armed Forces have extension of time for filing returns and paying taxes by disregarding period of active duty outside the United States, subject to minimum of 90 days.

THE BULLETIN BOARD

Amount of income which requires residents to file returns	Personal exemptions	Due date for return and payments	Title and address of taxing authority	Special provisions applicable to armed services personnel
PENNSYLVANIA: No personal income tax, but residents of some Pennsylvania cities and municipalities may be liable for local income taxes.				
PUERTO RICO: Gross income of: over \$800 if single or separated from spouse or if head of family; Over \$2,000 if married and living with spouse.				
\$800 if single or separated from spouse; \$2,000 if married or head of family; \$400 for each dependent.	Return due 15 April. Payment with return or in installments where no declaration of estimated tax was elected.	Commonwealth of Puerto Rico, Department of the Treasury, Bureau of Income Tax, P.O. Box 9717, San Juan (Santurce), Puerto Rico.	None generally; however, a qualified special \$500 deduction is allowed to veterans. Members of Armed Forces outside Puerto Rico may defer filing and paying.	
RHODE ISLAND: None.				
SOUTH CAROLINA: Net income of: \$1,000 or more if single or separated from spouse; \$1,800 or more net aggregate income of married couple.				
\$1,000 if single; \$2,000 if married or head of a household; \$400 for each dependent.	Return due 15 April. Payment with return or in installments if tax exceeds \$25.	South Carolina Tax Commission, Income Tax Division, Drawer 420, Columbia 1, South Carolina.	Income of members of Armed Forces subject to same computations as for Federal returns.	
SOUTH DAKOTA: None.				
TENNESSEE: Income of \$25 or more from dividends and interest.				
None.	Returns due 15 April. Payment with return.	State of Tennessee, Department of Finance and Taxation, Income Tax Division, Nashville, Tennessee.	None.	
TEXAS: None.				
UTAH: Gross income of: \$600 or more if single or separated from spouse; \$1,200 or more if married.				
\$600 if single; \$1,200 if married; \$600 for each dependent. \$600 additional for taxpayer and spouse for blindness.	Return due 15 April. Payment with return.	State Tax Commission, 118 State Capitol, Salt Lake City 14, Utah.	None.	
VERMONT: Gross income of \$500 or more. Declaration of estimated tax required on income not subject to withholding.				
\$500 for taxpayer; \$500 for spouse; \$500 for each dependent. \$500 additional for taxpayer and spouse for blindness and being 65 or over.	Return due 15 April. Payment with return. Declaration due 15 April. Payment of estimated tax with declaration, or in installments.	Commissioner of Taxes, State Tax Department, Montpelier, Vermont.	Income of members of Armed Forces subject to same computations as for Federal returns. Members of the Armed Forces may defer filing returns and paying taxes no later than 6 months from date of discharge.	
VIRGINIA: Gross income of: \$1,000 or more.				
\$1,000 for taxpayer; \$1,000 for spouse; \$200 for each dependent. \$600 additional for taxpayer and spouse for blindness and being 65 or over. \$800 additional for dependent mother, father, son, daughter, brother, or sister of unmarried taxpayer.	Return due 1 May. Payment with return or in installments if tax exceeds \$50.	Commissioner of Revenue, of the county of which taxpayer is a resident; or Commonwealth of Virginia, Department of Taxation, Richmond 15, Virginia.	None.	
WASHINGTON: None.				

Amount of income which requires residents to file returns	Personal exemptions	Due date for return and payments	Title and address of taxing authority	Special provisions applicable to armed services personnel
WEST VIRGINIA:				
None.				
WISCONSIN:				
Net income of: \$1,400 combined net income of married couple. Gross income of: \$600 or more.	Credit from tax: \$7 if single; \$14 if married or head of family; \$7 for each dependent.	Return due 15 April. Payment with return or in installments if tax exceeds \$20.	State of Wisconsin, Department of Taxation, Room 1000, State Office Building, Madison 2, Wisconsin; or Assessor of Income for county in which taxpayer resides.	\$1,500 active-service pay is excluded through 1958. Extension of time for filing and paying taxes is granted to members of the Armed Forces outside the United States on the date their taxable year ends or the date returns are due, until 6 months after discharge, but in no case after 15 June 1959.
WYOMING:				
None.				

DIRECTIVES IN BRIEF

This listing is intended to serve only for general information and as an index of current Alnavs and NavActs as well as current BuPers Instructions, BuPers Notices, and SecNav Instructions that apply to most ships and stations. Many instructions and notices are not of general interest and hence will not be carried in this section. Since BuPers Notices are arranged according to their group number and have no consecutive number within the group, their date of issue is included also for identification purposes. Personnel interested in specific directives should consult Alnavs, NavActs, Instructions and Notices for complete details before taking action.

Alnavs apply to all Navy and Marine Corps commands; NavActs apply to all Navy commands; BuPers instructions and Notices apply to all ships and stations.

Alnavs

No. 1—Orders the discontinuance and sale of certain food stuffs.

No. 2—Announced the receipt by the Department of the Navy of the President's Safety Award for 1956, for having the most outstanding record of performance and accomplishment in safety.

Instructions

No. 1085.44—Emphasizes the importance of accurate maintenance of service records for the purpose of reducing service-record errors.

No. 1500.25D—Lists the dates for classes at training activities under the management of the Chief of Naval Personnel, and certain schools of other services.

No. 1510.67A—Describes the procedures for administering enlisted correspondence courses of the Naval

Correspondence Course Center to active duty enlisted personnel.

No. 1910.12B—Authorizes the early (up to three months) separation of enlisted personnel for the purpose of commencing or resuming college education.

Notices

No. 1301 (6 January)—Discussed the current practices concerning the assignment and rotation of lieutenants (junior grade) and ensigns holding the designators 11xx, 13xx, 17xx and 18xx.

No. 1306 (8 January)—Established the sea-tour commencement dates for enlisted personnel to be eligible for Seavey Segment Two, which will be effective 1 June.

No. 1321 (9 January)—Announced Change No. 2 to BuPers Inst. 1321.2B, which is concerned with the subject of issuance of tem-

porary additional duty orders involving travel of officers and midshipmen.

No. 1223 (13 January)—Announced Change No. 5 to BuPers Inst. 1223.1, which is concerned with the Selective Emergency Service Rates program.

No. 1418 (15 January)—Announced the schedule of service-wide examinations for advancement to pay grade E-4 of specified ratings to be held in May.

No. 1440 (24 January)—Established procedures for effecting changes in rating to the AO rating to conform with modifications of the Enlisted Rating Structure.

More CPOs and PO1s Receive Warrant Officer Appointments

Seven first class and 10 chief petty officers have been issued temporary appointments to Warrant Officer, W-1.

These appointments are from an eligibility list established by a selection board convened 5 Feb 1957.

Regular Navy appointments were broken down into the following designators: Boatswain (7132), two; Surface Ordnance Technician (7232), two; Electrician (7542), one; Aviation Electronic Technician (7612), three; Communication Technician (7642), two; Ship Repair Technician (7742), one; Ship's Clerk (7822), one; Supply Clerk (7982), three; Photographer (8312), one; Civil Engineer Corps (8492), one person selected.



"Operator! — Get me BUSHIPS!"

COs May Authorize Separation Up to Three Months Early For Entrants to College

You may now receive permission from your commanding officer to be separated up to three months early provided you can establish eligibility. This authority and the conditions of eligibility are laid down in BuPers Inst. 1910.12B.

Up until this year, requests went to the Bureau via your commanding officer. This year it's different.

But different or not, in no case will you be separated more than three months before your normal expiration of active obligated service date and within this limitation, not earlier than 10 days before the date of convening of classes at the college.

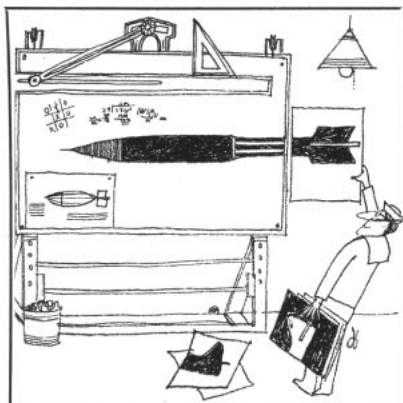
To clarify this further, your normal expiration of active obligated service date is the date upon which you would normally be eligible for discharge or release to inactive duty. When early separation programs are in effect, the "advanced" separation date is *not* used as normal expiration of active obligated service date.

Here is what you will need in the way of a statement from a college or university official to establish eligibility for release:

- That the university or college is currently listed in the Education Directory (Part 3-Higher Education), U. S. Department of Health, Education and Welfare.
- That you have been unconditionally accepted by the college or university for entrance in a specified semester or quarter.
- Convening date of class for the specified semester or quarter.
- The latest date on which you will be permitted to register for the specified semester or quarter.
- Convening date of class for the next succeeding semester or quarter in which you may enroll.
- That enrollment is for a full-time course of instruction.

There should also be a statement from a college or university official, or from you, which establishes the fact that you will be unduly handicapped in the pursuit of your education by delay in entrance until a date later than your normal separation date.

An undue handicap may be considered to exist provided you can



establish that scheduling of required courses in your field of study will result in a long delay in graduation if you are unable to enter the term you desire.

In addition and as a guide, undue handicap may be considered to exist when your normal EAOS falls not more than half-way between convening dates of classes for the term in which you desire to enroll, and the next succeeding term in which you may enroll. Here's an example of undue handicap:

Convening date of	
classes for fall term	25 Sep 1958
Normal EAOS	25 Nov 1958
Convening date of classes	
for next term in which	
you may enroll	3 Feb 1959

On the other hand, the following case would *not* normally constitute undue hardship:

Convening date of	
classes for fall term	25 Sep 1958
Normal EAOS	25 Nov 1958
Convening date of classes	
for next term in which	
you may enroll	2 Jan 1959

There are factors which can render you ineligible for early separation. Your performance of duty must have been meritorious. In the absence of other conclusive evidence of meritorious performance, one conviction by court-martial, or two impositions of commanding officer's non-judicial punishment during your current enlistment or tour of active duty, will hold you up.

If, to let you out early without an immediate replacement would reduce the operational readiness of the command to an unacceptable degree or, if your commanding officer feels that the only reason you're putting in for the early separation is to avoid service, then these reasons can prevent your early out.

Reservist May Extend Beyond End of Obligated Service

If you've been around the scuttlebutt recently you've probably picked up a fair share of rumors—and the chances are that a good percentage of them are inaccurate—as usual.

One of these items of scuttlebutt has it that BuPers Inst. 1910.5D will prevent enlisted Reservists from obtaining extensions of their active duty. Some Reservists, who have only a few years of active duty left before they can retire, have been especially taken in by this gossip.

The rumor is definitely *not* correct.

BuPers Inst. 1133.10A still authorizes a Reservist, who has sufficient obligated service, to obligate himself (subject to his CO's approval) to perform up to 48 months' additional active duty beyond his current date of expiration of active obligated service.

Here's List of New and Discontinued Courses

Seven more Enlisted Correspondence Courses are now available and four have been discontinued.

They are:

New Courses	NavPers No.
Aviation Structural Mechanic 3, Volume 1	91625
Fire Control Technician 2	91340
Aviation Structural Mechanic 2, Volume 1	91626
Signalman 3	91290
Airman	91600
Aviation Electronics Technician	91613
Signalman 2	91291

Discontinued Courses	
Fire Controlman 2, Volume 1	91318-C
Fire Controlman 2, Volume 2	91319-C
Aircraft Structures	91620-1B
Aircraft Structural Maintenance	91621-B

Enlisted Correspondence Courses will be administered (with certain exceptions) by your local command instead of by the Center.

If you are on active duty, your division officer will advise you whether the course for which you have applied is suitable to your rate and to the training program you are following. If it is, he will see that your application (NavPers 231) is forwarded to the Correspondence Course Center, which will supply the course materials to your command for administration.

Those on inactive duty will have courses administered by Center.

Everyone's Talking about Rota, Latest in Overseas Billets

LOCATED ON THE WESTERN shores of the Bay of Cadiz on Spain's southern Atlantic coast, U. S. Naval Activities, Rota, Spain, with its sub-commands — Naval Air Station, Naval Fuel Depot, Naval Magazine and Marine Barracks—offers Navy-men unique liberty opportunities.

A long weekend or four-day leave can put you in Africa or Portugal. A short weekend gives you a chance to visit Gibraltar or Seville. On a long leave, all Europe is your oyster.

Rota Naval Base represents the U. S. Navy's largest installation in the European-African area. When fully operational—some time in 1960—it will have all the comforts of a big stateside base.

Because of its newness at present, you and your family might experience some difficulties—mainly housing. Until fall there will be few units of government housing available (162 are already built and occupied). Some 334 additional units will be ready in October. The base, however, maintains a limited list of off-base housing. Bachelor quarters and messing for both officer and enlisted personnel are comfortable and adequate.

If you get orders for duty at Rota, here's a preview of Navy life in Southern Spain:

Climate

The Rota area, from April to October, is rather hot and sometimes dusty. The landscape and climate make it very similar to parts of southern California. The winter months are generally rainy, damp and frequently bone-chilling. The months at the beginning and end of winter are usually clear, cool and brisk.

The summer heat is moderated a bit by a sea breeze which blows more or less steadily from the Atlantic.

Temperatures from May to October range from 75 to 90 degrees; occasionally the mercury may reach 100 in mid-summer. Temperature lows during the same period vary from 55 to 70 degrees. The winter highs are 65 to 70 degrees, lows 45 to 55. Below-freezing temperatures rarely occur during the winter, but as humidity increases, the cold becomes quite penetrating.

Rainfall is not extreme, but can be sudden and heavy—almost semitropical in nature. The rainy months are December through March.

Inoculations

All military personnel and their dependents must receive a full set of immunization shots (small pox, tetanus, typhoid and typhus) before leaving the United States for Spain. Armed Forces medical facilities will provide inoculations; you can also receive them from the U. S. Public Health Service or a private physician. A certificate indicating the inoculations received should be carried.

Transportation

There is little likelihood that any concurrent travel orders will be issued for the next six months. Navy bachelors and husbands ordered to Rota will more than likely fly MATS to the base via either Madrid or Port Lyautey.

Navymen with dependents will first have to secure quarters (probably temporary off-base, until on-base housing becomes ready in November) before entry approval for dependents can be granted.

The Bureau of Naval Personnel's Transportation Section will then arrange for seats on a MATS flight from Maguire (New Jersey) Air Force Base to Rota via Madrid, or berthing on a commercial ocean liner sailing for Spain from New York (passengers generally disembark at Algeciras or Cadiz—Rota provides transportation for dependents and baggage from ports of entry). Passports must be obtained for all dependents entering Spain.

An automobile is almost a necessity. If you don't own one now, you can buy one after you arrive. A sturdy, economical European car may be bought locally through reputable agents for \$1200 upwards.

If you bring your present car, you must deliver it to the Naval Supply Depot at Bayonne, N. J., for shipment. Provide all necessary documents, including registration. If you have a lien on the vehicle, be sure you have a statement granting permission to ship the car overseas. Automobiles are generally shipped by commercial vessel to Cadiz (about 35 miles from Rota). Marine

insurance is an advantage. Liability insurance is compulsory in Spain; Spanish companies offer excellent coverage at nominal rates. Experience has shown that local companies are able to provide faster action than those with headquarters only in the U. S.

Spanish mechanics, although faced with a spare-parts import problem, are excellent do-it-yourself workers. In many cases, they can duplicate a broken part cheaper than it would cost to ship one in.

The best grade of gasoline available in Spain is roughly equivalent to the "regular" gas of the States. Military gas coupons, good at any Spanish filling station, enable you

NOW HERE'S THIS

How Now, No Cow?

If you think moving is a problem, how would you like to be in the shoes of a certain Navy captain?

The captain, his wife and two daughters, recently transferred from California to Memphis, Tenn. To get there, they made a cross-country trip with five cats, four dogs, two parakeets, one spider monkey and two horses.

The horses made the trip in a trailer, drawn by the family station wagon. The family traveled in the wagon along with the five cats, four dogs, two parakeets and one spider monkey. A third horse had to be shipped separately—there wasn't quite enough room.

This sort of thing is old hat to this Navyman, whose family has been traveling with the private zoo through 12 changes of duty.

On this latest trip their worst problem was the monkey. It had to be chained to a door to keep it from blowing the horn.



to buy gas at about 18¢ a gallon.

The roads of Spain, while almost universally picturesque, were not built with the big American automobile in mind. Further, the Spanish people are not educated in the potential of a 200-plus horsepower high-compression engine. Spanish driving, frankly, can be a hazard for persons used to American highways. The roads from before dawn to beyond midnight are frequently crowded with pedestrians, burros, mule-carts, bicyclists, vintage automobiles and impatient heavy-duty trucks. Generally, there isn't much chance of running over 50 mph for any extended period.

In spite of all the drawbacks to driving, seeing Spain—and Europe—by automobile is one of the high points of a tour of duty at Rota.

Housing

As mentioned earlier, 162 units of government housing are available but now occupied by Navy families. This community will be increased by 334 units, the first 100 of which should be ready by November.

A housing waiting line is being maintained at the moment, based on a point system which takes in such items as rank/rate and date of reporting aboard.

The houses are of a duplex type, of Spanish construction, and resemble typical California-style homes; a car port separates the two halves of each duplex unit. They come in two- and three-bedroom sizes. Furniture provided by the government includes complete living room, bedroom and dining suites,



"I give up, Charlie! What does have a big mouth and is a hundred feet long?"

electric stoves and refrigerators and rugs.

The off-base housing in the area consists of houses and apartments in the village of Rota and in the medium-sized cities of Jerez de la Frontera (17 miles from the base) and Puerto de Santa Maria (eight miles). Most are semi-furnished, although several unfurnished types also exist. You'll have to decide what to ship from the States after you've viewed the furnishings provided (there are no storage facilities at Rota).

Most of the older Spanish living accommodations do not approach U. S. standards in respect to electricity, water and heating. Some new Spanish civilian construction will have American-type facilities. Rents range from \$65 to \$200 for a reasonably livable house or apartment, depending basically on its location and condition and also upon your bargaining ability. In most cases the Spanish landlord will demand a one-year lease and usually a month's rent in advance. The base Security Officer and Legal Officer will check the contract before any final agreement is made.

One major factor to be borne in mind if you plan to live in Spanish quarters is the electrical power. Spanish current runs at 50 cycles. Your appliances should be of the type which function at 50-60 cycles. Voltage surges which may at times hit 160 volts could burn out the motor of a refrigerator or washing machine; it would be advisable to

purchase voltage regulators for these (available at Rota in the Ship's Store). Then, too, record players and tape recorders would have to be adapted to the lesser frequency input of 50 cycles. On-base Navy housing has 60-cycle, 110-volt current.

Small portable electric or kerosene heaters are a necessity in Spanish homes which have no central heating. These are available on the Spanish market or from the Navy Ship's Stores. Some of the homes and apartments have fireplaces; the Navy has stocks of firewood for sale.

It is suggested that you look over the housing situation after you arrive, decide either to wait for a government unit or contract for Spanish housing; then, as soon as housing arrangements are firm, request entry approval for your dependents. The type of household goods to be shipped will depend on whether you choose Spanish or Navy housing.

Domestic help is available and is quite economical. A good maid (general housework, laundry, some cooking) receives a salary ranging from \$6.00 to \$8.00 a month on an eight-hour-a-day basis. But, this isn't your only expense if you want servants: you've got to provide shoes and uniforms, insurance, usually a two-week Christmas bonus, a vacation, and meals. Figure on about \$40.00 per month.

Pets — Make sure you have all necessary documents before leaving the U. S. if you want to bring pets to Spain. Check with a Spanish Consul.

Clothing

Rota's winter climate is relatively mild but, because of the dampness and inadequate heating in Spanish homes, woolen clothing, heavy sweaters and topcoats should be brought.

It would be a good idea to bring at least a year's supply of clothing and shoes; for although clothing is available at the Rota Navy Ship's Store and at the Armed Forces European Exchange (AFEX) in Seville, stocks are limited.

Excellent clothing buys may, however, be made in nearby Gibraltar. British woolens and tailoring are available at reasonable prices. A generous selection of women's clothing is always on display in Gibraltar shops.



"If I told you where I was, you wouldn't believe me!"

WAY BACK WHEN

Comet, Privateersman of 1812

Children's clothing may be purchased either in the Ship's Store at Rota, AFEX in Seville, in Gibraltar or on the Spanish market. Spanish and British styles are similar to those of the U. S.

Spain is a rather conservative country in terms of dress. Women seldom wear shorts or slacks when in public (except when engaged in sports); two-piece bathing suits are generally taboo on beaches; low-cut dresses are not worn in public except with a shawl or jacket. When visiting cathedrals, women *must* wear hats or other head covering and have their arms covered at least to the elbow.

Navymen wear uniforms so a full seabag is necessary. Officers and CPOs wear service dress blue in the winter months, service dress or tropical khaki (or white) in the summer. Enlisted men wear whites in summer, blues in winter. Dungarees and working khaki are authorized for jobs which would dirty prescribed uniforms.

Civilian clothes are recommended for leave and liberty. Men in Spain dress conservatively. Except for hot summer months, Navymen in civilian clothing must wear a coat and tie in public. Slacks and sport shirts are permissible only during the summer.

Dry cleaning facilities (Spanish) are available on the base. A laundry, tailor and cobbler shop will open shortly.

Women will want a formal or two, cocktail dresses, plenty of washable summer frocks and a few dressy winter woollens.

Currency

American currency is used exclusively on the base. There are no banking facilities; it is suggested that a checking account be maintained with an American bank. Spanish pesetas—worth 46 to the dollar (U. S. military exchange)—can be obtained on the base. Personal checks (under \$100) will be accepted in the Ship's Store.

Base Shopping

A recently-established Navy Ship's Store (Ashore) stocks uniforms, clothing, tobacco, household needs, toys, European products and a good general department store selection. The commissary section offers American canned and packaged

During the War of 1812, privateersmen dealt in a trade that was carried over from the Revolutionary War days. They were fearless and self-reliant. These men rode small, fast sailing ships that were over-sparred, overarmed and overmanned, and took many risks in order to capture ships as prizes. One of these privateers was the 14-gun *Comet*.

She was out of Baltimore, Md., and commanded by Captain Boyle, an excellent sailor who was liked and trusted by his 120-man crew. She carried six guns in a broadside, a swivel, and a gun amidships. Extra crews and prize masters to man her captures were crowded between her decks.

One of the incidents started 9 Jan 1813 when Captain Boyle cruised his little ship up and down in front of the harbor of Pernambuco, Brazil, for five days, waiting for three loaded English ships to come out. On the 14th they were spotted moving out of the harbor, joined by a fourth. Captain Boyle moved out of the way to let them pass, then put after them.

The little *Comet*, running in a tremendous sea, was spurred on by a freshening breeze. He caught up to the four ships late in the afternoon and slowed to keep pace with them. They showed no apparent fear of the little ship.

Around 1800 Captain Boyle discovered why they showed no concern when one of the ships drifted back as though waiting for the American to catch up. This ship was a large man-o'-war brig. Quickly, *Comet's* guns were loaded with round shot and grape and the decks cleared for action. Captain Boyle hoisted the American flag. The other hoisted Portuguese colors.

The captain of the brig hailed *Comet*. Both ships hove to and the Portuguese brig sent over a boat. When he came aboard, the Portuguese officer appeared startled at seeing the men standing stripped to the waist about the guns. He informed Captain Boyle that his ship belonged to His Majesty (of Portugal), that she carried twenty 32-pounders and a crew of 165 men and that his orders were to protect the three English ships. Captain Boyle replied that he had admired the appearance of the ship greatly but that his orders called for capturing the three English ships and if he interfered, he would be the aggressor.

Before leaving, the Portuguese officer reminded him that the other ships also were armed. They were. The English ship *George* had 14 guns, the two smaller English brigs, *Bowes* and *Gambier*, ten guns apiece. Fifty-four guns against 14.

The sun went down and the moon came up as Captain Boyle headed *Comet* toward the largest English ship. He hailed them



to back their main-topsail or he would fire a broadside into her. The man-o'-war brig had crowded on all sail and was hard after the American. *Comet* fired, hitting two of the English ships. The Portuguese brig closed alongside and fired a broadside at *Comet*. *Comet* returned the fire with tremendous effect and tacking, again let go her starboard battery at *Gambier* who was closing in. *Comet* loaded and fired again and the enemy appeared to be confused and frightened. She stuck close to the Englishmen, letting go whole broadsides into them at point-blank range, firing whenever she came within range.

At 2300 the big British ship *George* surrendered, being cut almost to pieces and quite unmanageable. As soon as this happened, Captain Boyle gave *Bowes* a broadside that ripped her bulwarks and cut away her running-gear. She hauled down her flag.

Comet readied a boat with a prize crew and lowered away. The boat was only a short distance away when the Portuguese man-o'-war fired a broadside at the boat nearly swamping it. The boat returned to *Comet* half-full of water and was taken aboard. When *Comet* opened fire with all guns the Portuguese ship broke off the engagement and left the English ships to their destiny. When this happened, *Gambier* surrendered.

All night Captain Boyle kept a weather eye on his prizes.

The three reached Pernambuco in safety—*George* and *Gambier* were in a sinking condition, and the cockpit of the man-o'-war, which was badly cut up below and aloft, filled with dead and wounded.

Comet and *Bowes*, with a prize crew aboard, reached the United States in safety but not before Captain Boyle had made several more important captures and sailed through the entire English blockading squadron in Chesapeake Bay to get to the wharf in Baltimore.

foods, frozen meats, pasteurized milk. Prices are generally lower than Stateside.

A special-order department will arrange to obtain items not carried in stock, from European or American sources.

Medical, Dental Facilities

A full medical and dental staff is on board. However, it is occupying temporary facilities pending completion of a modern dispensary.

Dependent clinics are functioning and pre-natal consultations are available. Until the dispensary is ready, major medical treatment is provided by Armed Forces hospitals at Seville or Port Lyautey.

While no general dental care will be provided dependents (except on a possible "space available" basis), emergencies will be treated. The dental department recommends reputable Spanish dentists for dependents.

Recreation

Getting back to the original theme of "looking for those castles in

Spain," you'll find plenty of historic keeps (fortresses), battlements, and entire cities, some dating back to almost 1000 B.C.

Rota is in the region known as Andalusia, a section of Spain in which the tides of history have ebbed and flowed in colorful ancient glories. Phoenicians, Greeks, Romans, Moors, Crusaders, Napoleonic armies, battled over this fertile—and strategic—seacoast region.

From Palos, 40 miles along the coast north of Rota, Columbus, and later Cortez, set out on their dramatic journeys West. One can still, it is said, sit at the table on which Columbus charted his course, outlined his plans.

In another direction, in the hill country around Arcos de la Frontera, you can view the surrounding landscape from a high battlement once occupied by Roman legionnaires.

This is but a sample of the things you'll see during your tour at Rota. A weekend is time enough to drive (the Navy frequently sends liberty

parties by bus) to famous cities like Granada, Malaga, Seville. Sightseeing is relatively inexpensive; over-nighting in a good hotel or Spanish "motel" runs about \$3.00, less meals.

Within less than an hour's drive from Rota are four bull rings, where you can watch a "corrida" (bullfight).

The city of Jerez is the center of Spain's sherry industry. Bodegas (wineries) open their doors (and samples) to visitors daily. Jerez and Seville feature good restaurants and theaters. There are several night-clubs in Seville offering floorshows which include flamenco dances.

Rota, being on the Atlantic coast, has fine beaches, as well as boating and fishing possibilities.

On the base, outdoor tennis, volleyball and basketball courts are available; a temporary theater runs Hollywood and European films nightly. The new enlisted men's club opened recently; officer and CPO clubs will be ready in a few months.

And, in addition, your orders to Rota translate into a leave ticket for anywhere in Free Europe, Africa and the Near East.

Religious Facilities

Spain is almost totally Roman Catholic. Most Catholic Navy personnel attend services in the cathedrals of the nearby cities. Protestants are served by an Air Force chaplain who makes weekly trips to Rota; a Sunday School has been established. The base chapel will be completed late this year. A Catholic chaplain is aboard and a Protestant chaplain reports for duty early this month.

Education

A dependents' school is functioning on the base in a temporary five-room building, and is staffed by five teachers. High school is a supervised correspondence-course type. By the beginning of the 1958-59 school year in September, the base's new, modern schoolhouse will be ready for use. The teaching staff will be increased to accommodate full-time high school curricula. There is no fee for tuition, books or materials. Children entering first grade must be six years of age by January of the current school year (the school year is mid-September to mid-June, with a semester break in January).

WHAT'S IN A NAME

He's the Most

When someone in the Navy claims a "first," "biggest," "littlest," "youngest," "oldest" or "most" he is usually snowed under with challenges. But, if Isaac Fassett, Steerage Steward, USN (Ret), decides to claim that he has been drawing non-disability retirement pay longer than any other living Navyman it's hard to see how he could have very many challengers.

He's been getting this fringe benefit for the past 47 years, and if not the oldest, he must be at least one of the oldest enlisted men on the retired list.

Fassett was born in Berlin, Md., on 15 Jan 1858—the same year that Abraham Lincoln and Stephen A. Douglas held their famous series of debates. He was 17 years old when General Custer and his men were wiped out by the Sioux in the Battle of the Little Big Horn.

Apparently it took Fassett quite a while to decide on joining the Navy, for he was almost 24 years old when he first enlisted at Philadelphia, Pa., on 3 Dec 1881. That was the year President James A. Garfield was assassinated.

Most of Fassett's Navy career was spent at the Navy Yard, League Island, Pa., where he served in the receiving ships *St. Louis*, *Richmond*, *Minneapolis*, *Puritan* and *Lancaster*. (During the Spanish-Ameri-

can War he was on board *Richmond*.)

He left League Island in 1909, and on 16 Jan 1911, after Atlantic Fleet duty in *USS Louisiana*, *Idaho*, *Franklin* and *Tennessee*, he retired at the age of 53. At that time, since his active duty during the war with Spain counted double, he was credited with 30 years and 20 days of service.

Today, Navyman Fassett is living in Philadelphia, where he celebrated two anniversaries this January — his 100th birthday and his 47th year of retirement.



ROTA

new link in defense chain

As time goes on, the name "Rota" will become more and more familiar to Navymen everywhere. It's the newest of our overseas bases. When completed, it will be one of the world's most modern ship and aircraft support stations, ideally situated for the support of Eastern Atlantic and Sixth Fleet operations. You'll probably see it someday. Here's your introduction.



SPANISH-AMERICAN naval base at Rota is a link in the defense of the free world. Here, workers pause by tetrapod.

Not long ago, the Commander, U. S. Naval Activities, Rota, Spain, slashed with his dress sword a red ribbon—an act which symbolically gave Navymen and their dependents the freedom of Rota's New Navy Exchange commissary and retail store. This was the third such function he had performed within a week and, with that act, the pioneer era for the Americans living at the joint Spanish-American Naval Base came to an end.

You may not have heard much about Rota in the past, but you will from now on. It is a newly constructed naval base which will serve as a defense against aggression in the European-Mediterranean-African area.

RISING OUT OF AN ANCIENT vineyard region on Spain's southern Atlantic coast is the sprawling, 6000-acre

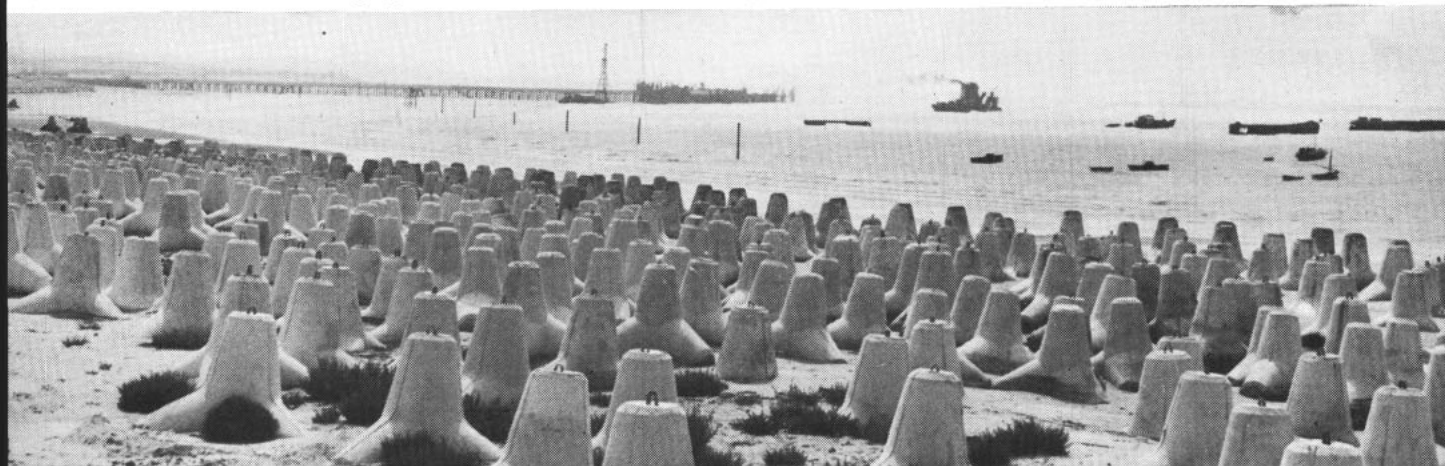
naval complex at Rota. When completed, ships as large as 60,000-ton *Forrestal*-class aircraft carriers will be able to be moored, refueled, revictualled, and re-ammunitioned, and have jet and conventional aircraft serviced.

Rota, like other United States bases in Spain, is on Spanish soil over which flies the Spanish flag. A Spanish Navy captain is in command of the entire base area; a U. S. Navy captain commands American activities.

A Navy fuel depot is already in operation. It is the port terminus of a 485-mile, multi-product pipeline which feeds aviation and vehicle fuels to four U. S. Air Force Strategic Air Command bases now under construction in the Spanish interior.

Mutual Defense, Economic Aid and Defense agree-

GIANT TETRAPODS ranging in size from 8 to 25 feet give protection to beach at Rota, Navy's new overseas base.





ON A BENDER — Spanish workmen bend steel rods while building fuel oil pump system at the Rota base.

ments signed in 1953 by the American and Spanish governments provide for a 10-year lease on the base sites, subject to two five-year extensions.

When completed, the American installations at Rota will have cost an estimated \$120 million. Facilities of the base will make it one of the world's most modern warship and aircraft support stations.

Spain is also constructing certain naval facilities at the Rota base.

STRATEGICALLY, Rota is ideally situated for the support of Eastern Atlantic and Sixth (Mediterranean) Fleet operations. The base is on the Atlantic, only 60 air miles west of Gibraltar.

When most major construction is finished (in late 1958 with the exception of an artificial harbor which should see completion in mid-1959), Rota will be the site of the largest U. S. Naval shore unit in the European-African area.

The City of Rota (winter population: 14,000) is on the western headland of the Bay of Cadiz. Archaeological discoveries indicate that the Cadiz region was perhaps the site of Europe's first organized city. The Phoenicians established a trading community at Cadiz in approximately 1100 B.C.

Bulldozers and power shovels breaking ground inside the confines of the naval base have turned up Phoenician tombs, coins, and pottery, plus relics of later periods.

PIER FOR TWO — Two T-2 tankers will be able to off-load their cargo simultaneously at Rota's fuel pier.



On one beach, bathers discovered what appeared to be teeth from a prehistoric reptile. The Navy has ordered that all such finds be turned over to Spanish archaeological authorities.

Rota is one of Spain's popular seashore resorts. During the hot summer months, Spaniards come to Rota from big cities like Madrid and Seville to seek relief on the always breezy Atlantic coast.

Just to the east of Rota is the world-famous sherry country of Jerez. Forty miles along the coast to the north, lies Palos, the tiny harbor from which Columbus sailed west to discover the New World in 1492.

THE SPANISH NAVY purchased the tract of land on which the base is being built. Although the base is still in a partially completed state, with most buildings and facilities still under construction, the nucleus Navy community of some 290 Navymen and Marines has been in operation as the advance echelon of the future base.

To get the base underway as soon as possible, Navy planners have geared construction schedules toward elementary fueling, aviation, administrative, supply and housing installation, with full-scale refinements slated for the future.

Thus, Rota at present has an airstrip capable of receiving jet and heavy transport aircraft, a temporary facility for off-loading fuel tanker cargoes into the fuel depot, administrative and supply buildings, and semi-finished but livable quarters for officers and enlisted personnel. In addition, a number of dependent housing units have been completed for married personnel.

Ultimate mission of the Naval Base will include:

- Servicing ships and aircraft of the Atlantic and Sixth Fleets
- Replacement pool of carrier-type aircraft
- Occasional basing of carrier aircraft units
- Complete food, fuel and ammunition replenishment for ships
- Storage at the Naval Fuel Depot of ship, aircraft and vehicle fuels, and transfer of fuel to the U. S. Air Force pipeline for pumping to the inland Strategic Air Command bases.

THE NAVY'S OPERATIONS at Rota are under the jurisdiction of the Commander in Chief, U. S. Naval Forces Eastern Atlantic and Mediterranean, whose headquarters are in London. However, all U. S. military construction in Spain is being supervised by the Navy's Bureau of Yards and Docks.

Physically, the U. S. portion of Rota is divided into

five major operating areas: the Naval Air Station, the port area (actually part of the air station), the Naval Fuel Depot, the Naval Magazine, and the Marine Barracks. Joint housing, messing and recreational facilities will support all U. S. Navy and some civilian personnel.

In various stages of construction at the Naval Air Station are:

- A runway system capable of handling jet aircraft including an already completed 200-by-8000-foot runway, with extensions scheduled to be added in 1958.
- A 75-by-4000-foot taxiway including connecting taxiways.
- A 6200-foot tow-way linking harbor facilities to aircraft maintenance areas for transfer of carrier aircraft.
- A 620-by-2200-foot aircraft parking area.
- Navigation aids such as Ground Control Approach and homing beacon.
- Aviation structures including maintenance hangar, nose hangars, flight operations building, crash boat facility, parachute loft, ordnance building, communications building, fire and crash station.
- Administration and supply buildings (completed).
- A 328-by-1000-foot marginal wharf, with 33-by-2440-foot approach, for mooring vessels up to the size of USS *Forrestal* (60,000 tons).
- Finger pier for smaller vessels, 151 by 1150 feet.
- An artificial harbor dredged to a minimum depth of 35 feet; this may be increased to 40 feet in the near future.

A breakwater system employing more than 10,000 giant 8- to 25-ton concrete "tetrapods," which were first designed and used by the French, is being installed to protect Rota's artificial harbor.

THE TETRAPODS, which resemble colossal children's "jacks," are deposited on the open-sea side of the breakwater. Their odd configuration serves to break up the massive front of waves and thereby reduce the impact of wave action on the breakwater.

The Naval Magazine will store naval ammunition, and have servicing shops for projectiles and torpedoes.

The basic role of the Rota base at present is the receiving of seaborne fuel cargoes, storing them in huge underground tanks, and transferring fuel to the nearby U. S. Air Force pumping station which starts the fuel moving to the four Strategic Air Command bases connected by the 485-mile "trans-Iberian" pipeline.

The Navy's Rota fuel depot is capable of caching well over 50 million gallons of petroleum products in 28 underground and 12 surface tanks. Pending completion of a "T"-shaped fuel pier, tankers are now discharged by means of two underwater lines. The pier, when completed, will extend some 1200 feet from shore, with the crossing "T" head stretching 1600 feet.

The pier will be able to accommodate two super-tankers (more than 5,670,000 gallons each).

FUEL STORAGE ARRANGEMENTS call for accumulating Navy special fuel oil and diesel fuel for bunkering naval vessels as well as motor gasoline and aircraft fuels for local consumption. All fuels—except the Navy special—can be delivered to the Air Force pump station at Rota for pipeline movement to the USAF bases throughout Spain.

The Air Force is responsible for moving fuels through the pipeline to the four SAC bases. The entire system



STRIP FOR ACTION — View shows section of 75-by-4000-foot taxiway of the Naval Air Station in Spain.

operates much like a railroad network, complete with spurs leading to the individual bases and provision for reverse flow back to Rota. It is one of the few multi-product pipelines in the world (that is, one type of fuel can follow another through the line without extensive contamination).

From Rota, the pipeline climbs from sea level to Seville (altitude: 100 feet), site of the Moron and San Pablo SAC bases, ascends the 4000-foot Sierra Morena mountain range, descends onto the great La Mancha Plateau to Torrejon base outside of Madrid, climbs again to nearly 6000 feet over the Guadarrama range, then drops abruptly to nearly sea level into Zaragoza, location of the last air base in the chain, and the end of the pipeline.

The entire 485-mile pipeline has a fuel capacity of 290,000 barrels (12,180,000 gallons). The line "tapers" from a 12-inch diameter at Rota to eight inches at Zaragoza.

Five USAF pumping-storage stations (in addition to the station at Rota) punctuate the line between Rota and Zaragoza. These perform the dual job of pushing fuel along to the next station or side-tracking a given quantity into storage tanks in order to clear the line for movement of another type of fuel.

ROCK AROUND ROTA — Flat cars deliver quarried stone to be used in building harbor's breakwater system.





NEW FRIENDS are made while visiting church attended by Columbus at Palos, 40 miles from Rota Naval base.

A fuel consignment destined for Zaragoza traveling "non-stop" from Rota would cover the 485 miles in approximately eight days. However, the six storage stations stock all the fuel types necessary for immediate local consumption.

In all, the pipeline and connecting storage tank system in Spain will have a maximum holding capacity of 3,982,840 barrels (167,279,280 gallons).

As a multi-product pipeline, the facility makes it possible for one type of fuel, such as high-octane aviation gas, to follow immediately a flow of, say, motor gasoline which in turn may be followed by jet fuel, with only a negligible amount of contamination. The Navy Fuel Depot is also equipped for shipping fuels overland.

The fuel depot is the first portion of the entire Spanish base development system in operation.

ROTA WILL BE ABLE to house 150 single officers and nearly 1400 single enlisted men. Messing arrangements will accommodate 205 officers, 1000 men. There are provisions for additional barracks in the future. Initial bachelor housing is now sufficient to cover immediate requirements.

A total of 162 dependent housing units is available, and 90 families are already living in recently-completed homes.

For recreation and personal convenience, the Navy is building a commissary, Navy Exchange, chapel, gymnasium, library, clubs and a laundry. A school for dependent children is in operation. There will also be sport areas for baseball, volleyball, outdoor basketball and tennis. Future plans include a club house on one of the beach areas inside the base.

Besides the prime construction contractor—an American firm—there are engineering contingents from Britain, Germany and France working on the base plus over a dozen Spanish building companies. Specialists from all over Europe have been called in to handle complicated engineering and mechanical problems, particularly in the fuel pumping systems.

A number of men attached to the American construction company have worked on U. S. building jobs ranging from the Arctic wastes to the Arabian deserts; two worked in Russia during World War II.

WHEN CONSTRUCTION BEGAN in early 1954, the building crews and U. S. Navy personnel (a Navy Seabee detachment worked on the sea-loading fuel system) had to meet problems not only on the language level, but in standardizing building and construction techniques.

After nearly three years of working together, Spaniards, Americans and other Europeans on the Rota project seem to have learned some valuable lessons from each other.

The installations being built by the United States in Spain are not necessarily limited to military use. The pipeline, the harbor at Rota, the SAC airstrips, the improved public utilities, all have peacetime possibilities. And the training of Spanish engineers in large-scale construction projects is equipping them for more efficient work on Spanish civic improvements.

Frequently, the Old and the New Worlds joined forces during Rota's construction. A common sight, for instance, was a string of burros loaded with sand plodding toward a sand-washing stand, while 15-ton dump trucks rumbled past in the opposite direction carrying fill for naval base construction.

As another example, the fuel depot builders found that in mud and sand, oxen were more efficient for hauling steel sections of the underground storage tanks than were man-made vehicles.

Spanish laborers working in the massive supply warehouse were at first awed by the small but powerful fork-lift cargo trucks, but within a remarkably short time, developed excellent handling techniques.

Until recently, all U. S. military personnel were living in houses, apartments and hotels in Rota and the nearby cities of Puerto de Santa Maria and Jerez de la Frontera. All bachelors and men without dependents in the area have now moved into government quarters on the base.

However, with the teeming summer vacation crowds

SAIL ON — A Spanish guide describes Columbus' route during visit to Columbus statue at near by Palos.



jamming the Rota region, the housing situation became critical. The completion of sufficient on-base quarters helped avert an uncomfortable situation.

The fact that Americans were living in the Spanish economy, and mixing with Spaniards socially, has done much to maintain the good relations existing between the two nations. Since it is important to know the Spanish language in order to get along in Spain, Americans have been learning quickly and at the same time have been developing a definite interest in the Spanish way of life.

One potential problem which had to be met was local inflation of the Spanish peseta (currently worth about 42 to the dollar). American personnel were cautioned not to pay more for goods and services than the Spaniards themselves.

In the early days, living and working on the base, by American standards, was slightly above primitive. The construction effort, naturally, has been to concentrate on development of major operational features like buildings, roads, and utilities, with little attention to conveniences such as furniture, interiors, etc.

DRIVING ABOUT THE base has been a spine-shaking dusty adventure.

Explained a hardened Navy driver to a newly-arrived shipmate:

"The thing about driving on the base here, is that you're like a ball shot into a pin-ball machine. You can see where you want to go, but the detours and road blocks keep sending you in the wrong direction. Finally you get where you want to go after a general tour of about half the base. Then, two days later, you find a whole new system of detours and road blocks."

By mid-September of 1957, the principal roads to the administration, supply, aviation, fuel depot, housing and harbor areas were generally free of work crews and some were already black-topped.

Driving in the narrow-streeted cities presented an altogether different problem for Americans with big cars. Spaniards are not generally traffic-conscious, and the variety of transportation using the roads and streets (bicycles, burros, oxen, mules, horsecars, vintage automobiles, giant industrial trucks, small European cars) guaranteed that the American driver would not fall asleep at the wheel.

Most of the smaller cities have no traffic lights and have traffic policemen only in the main squares. Driving past intersections is a horn-blowing hazard. Almost everybody has some sort of a sixth sense developed for the road.

One can never tell when a burro or cyclist will suddenly loom up in the middle of the road around the next bend. And the "two way" streets in most towns seem to have been measured for the narrow passing of two Roman chariots. Many an American in a Detroit product has had to maneuver in reverse to extricate himself from a near jam—with much sideline coaching by Spanish spectators.

THE WEATHER OF southwestern Spain is sub-tropical and semi-arid. Summer heat, radiating from a generally cloudless sky, sometimes goes as high as 110° F. Cooling sea breezes at Rota, however, tone down the temperature to the high 80s or low 90s.

The worst climatic situation is the "Levante," a hot,



MARINES arrive at Rota where they will serve as security guards for the Navy air-sea base being built.

dry wind which occasionally blows up from Africa's Sahara desert. When it blows, it blows consistently—sometimes reaching a velocity of 40 miles per hour, straining nerves and tempers. At Rota, the Levante carries driving sand from the nearby beaches and the areas under construction.

The time-honored Navy expression—"snowed"—has been altered at Rota to "sanded."

Maintaining the link with Port Lyautey, and also with the U. S. military headquarters in Madrid, is an R4D (C-47) transport. This hardy twin-engine plane known as the "Toonerville Trolley" operates a three-times-a-week schedule on the Rota-Madrid-Port Lyautey circuit.

Besides flying passengers, mail and military cargoes, this plane also delivers fresh (re-constituted) milk, bread, frozen foods, canned goods, and household necessities to Rota's Navy Exchange. When a plane manages to deliver a load of milk, it is usually sold out within a few hours.

There is a variety of recreational facilities—and more to come. The nearby beaches are as good as or even better than many American beaches; private clubs offer membership to Americans and provide sports like tennis and yachting; an undeveloped part of the base is being used as a skeet shooting range; hunting is possible by invitation from land-owners.

THEN there are native Spanish diversions like the Sunday (and holiday) bullfights, frequent folk festivals featuring native flamenco dancing, and the simple relaxation of sitting at an outdoor cafe, sipping the excellent product of the local vineyards, and watching the Iberian world pass by.

Navymen with automobiles have been combing the surrounding countryside, which is rich in the history of the basic forces which helped mold our western civilization. Within a hundred-mile radius of Rota, one can view traces of the epochs which shaped Spain: Phoenician settlements, Grecian trading posts, Roman fortresses, Moorish castles, Spanish imperial palaces.

The naval base at Rota, with its potentially vital contribution to defense, is a historical development out of the hazardous voyage of the three ships which Columbus led into the unknown west 465 years ago.

TAFFRAIL TALK

WE TRY IN EVERY WAY to make the information that appears in each issue of *ALL HANDS* the latest material available. However, in this age when scientific barriers are being constantly smashed, the task is becoming increasingly difficult.

For instance, look through this issue devoted to Naval Ordnance and see if you can find more than a bare mention of the missile *Corvus*, or of *Green Quail* or *Bull Goose*. You won't, because it was announced after the magazine was ready for the printer and only in time to be included in this column.

Corvus is the latest addition to the Navy's family of missiles. It is an air-to-surface missile that will be used by carrier-based aircraft to penetrate heavily defended areas, or for striking at surface ships. You might compare it with a boxer's left jab which he uses as a "stick" to smash repeated blows into the opponents' face while staying out of counter-punch range.

Another Navy missile which has received a great deal of attention in the press recently is *Polaris*. The Navy has announced that *Polaris*-launching, nuclear-powered submarines will carry more than 10 of the missiles designed for submerged launching.

The feasibility of submerged firing of a solid fuel rocket has been confirmed by tests conducted since 1946 and '47, including the firing of a solid fuel missile test vehicle from under water.

It has been pointed out that, once a *Polaris*-bearing nuclear-powered submarine goes to sea no one will see it again until it returns. It will stay submerged during the entire cruise and, so far as a potential enemy is concerned, he must consider every U.S. submarine at sea the *Polaris* vehicle.

Detection of the submarine carrying the IRBM missiles will be very difficult. Once it leaves port it will proceed submerged to a sea station where it will hover or maneuver at very low speed. From this station it will be able to launch its missiles at a number of targets. An enemy will be able to guess what points will be the targets for these submarine-launched missiles, but it will be nearly impossible for him to counteract the missiles once they are in flight for the exact point of launching, a vital factor in anti-missile planning, will be unknown.

Polaris accuracy is dependent on exact ship navigation and for that purpose an inertial navigation system for ships has been developed in experiments aboard *USS Compass Island* (AG 153). The *Compass Island* developments exceeded Navy expectations and another backup navigation system has recently given excellent results.

Another ship, *USS Observation Island* (AG 154), is also being used for work on the navigation problem and will be used for launching tests. A submarine missile system will be duplicated in *Observation Island* for the launching tests.

There were also two Air Force missiles which were announced too late to be covered in the *Service Scope* Section, *Bull Goose* and *Green Quail*.

This column is usually the last word in the magazine, but you can bet your sea boots that this is not the last word in the development of naval ordnance.

The All Hands Staff

The United States Navy

Guardian of Our Country

The United States Navy is responsible for maintaining control of the sea and is a ready force on watch at home and overseas, capable of strong action to preserve the peace or of instant offensive action to win in war.

It is upon the maintenance of this control that our country's glorious future depends. The United States Navy exists to make it so.

We Serve with Honor

Tradition, valor and victory are the Navy's heritage from the past. To these may be added dedication, discipline and vigilance as the watchwords of the present and future. At home or on distant stations, we serve with pride, confident in the respect of our country, our shipmates, and our families. Our responsibilities sober us; our adversities strengthen us.

Service to God and Country is our special privilege. We serve with honor.

The Future of the Navy

The Navy will always employ new weapons, new techniques and greater power to protect and defend the United States on the sea, under the sea, and in the air.

Now and in the future, control of the sea gives the United States her greatest advantage for the maintenance of peace and for victory in war. Mobility, surprise, dispersal and offensive power are the keystones of the new Navy. The roots of the Navy lie in a strong belief in the future, in continued dedication to our tasks, and in reflection on our heritage from the past. Never have our opportunities and our responsibilities been greater.

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The Bureau invites requests for additional copies as necessary to comply with the basic directive. This magazine is intended for all hands and commanding officers should take necessary steps to make it available accordingly.

The Bureau should be kept informed of changes in the number of copies required.

The Bureau should also be advised if the full number of copies is not received regularly.

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• **AT RIGHT: FRAMED** — Crew member of *USS Cascade* (AD 16) is seen through hatch as he stands after gangway watch. The destroyer tender was moored at Newport, R. I.



details at sea



★ ★ ★ **our scientific electronic
navy needs men
who know their jobs** ★ ★ ★